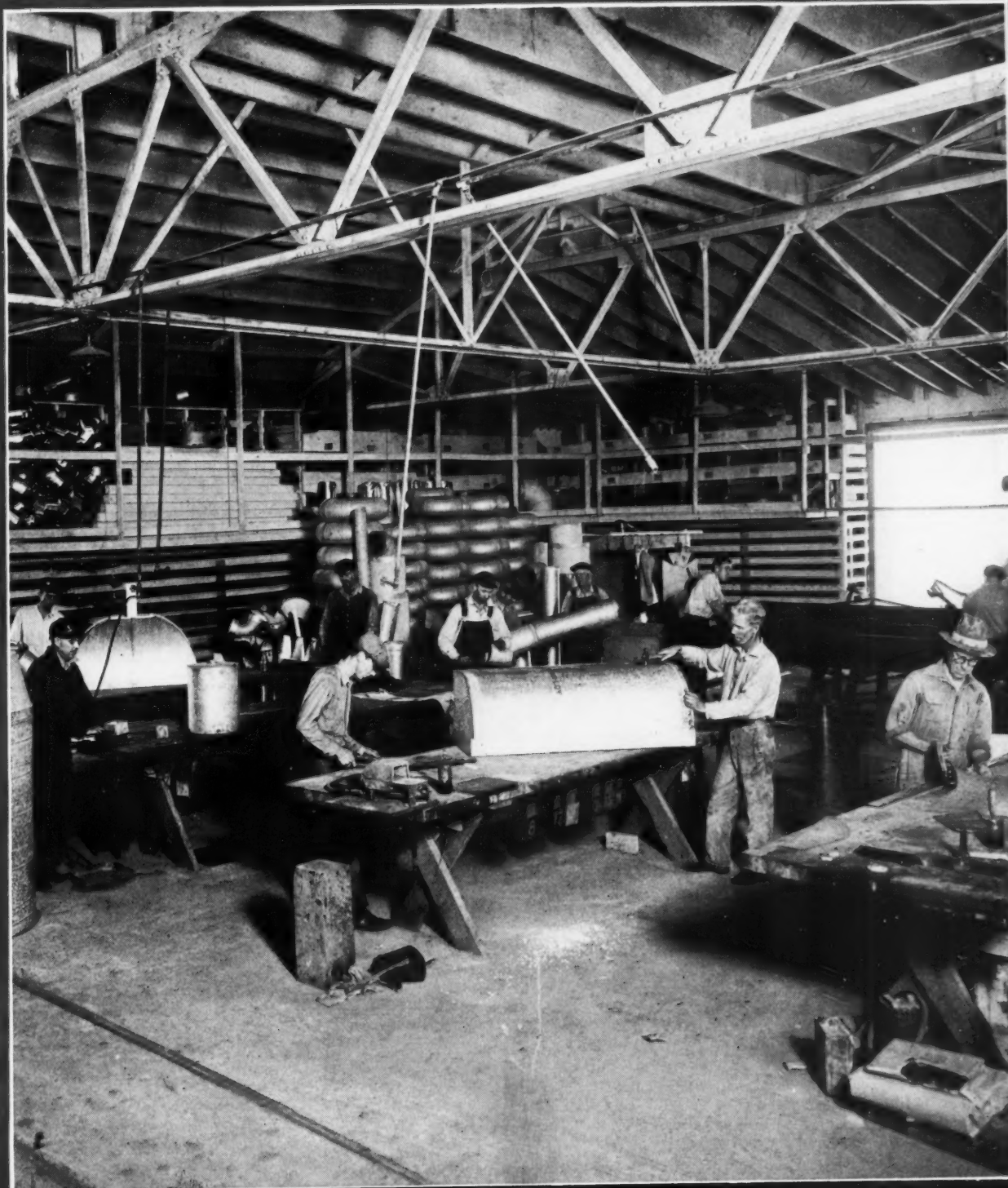


AMERICAN ARTISAN

WARM AIR HEATING • SHEET METAL
CONTRACTING • AIR CONDITIONING



ESTABLISHED
8 8 0

AUGUST
1934

AMERICAN ARTISAN



no Repairs **IN TWELVE YEARS**



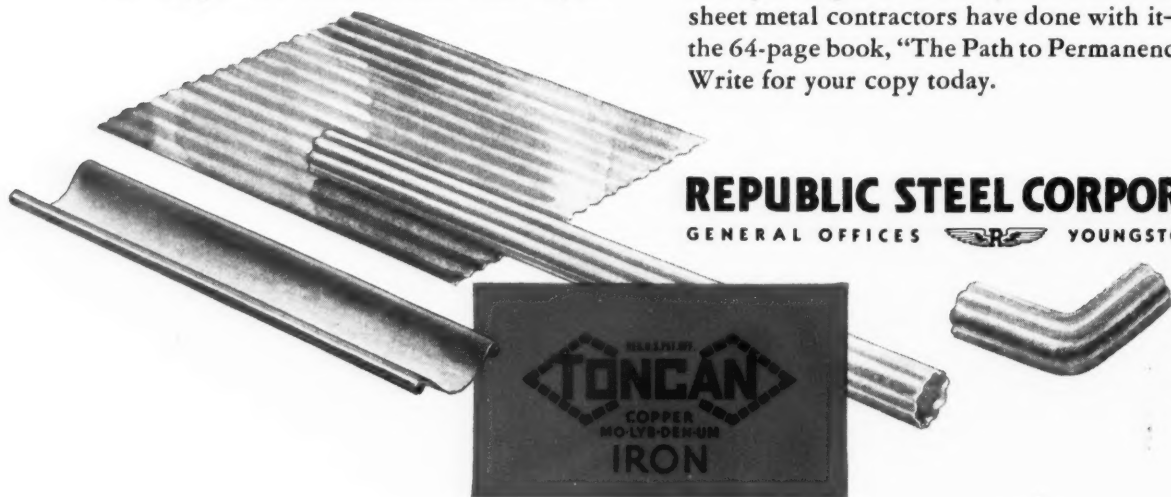
Twelve years ago, Frank A. Del-
lecese built these three homes
in Utica, N. Y., using Toncan
Iron for cornice, gutters, elbows and down-
spouts. For twelve years, Toncan Iron has
given perfect service without a single repair,
and a recent examination showed this material
to be in excellent condition.

Twelve years is not a long period of time
for Toncan Iron to last—plenty of records
go on into the twenties—but it is typical of
the longer life and freedom from repairs

that this alloy of refined iron,
copper and molybdenum affords
far-sighted property owners.

Hundreds of sheet metal contractors are
familiar with its merits—hundreds use it every
day as a matter of course. They know it
lasts and builds good will. They know it
fabricates more easily and, despite its slightly
higher first cost, actually reduces the labor
expense of bending, shaping, forming.

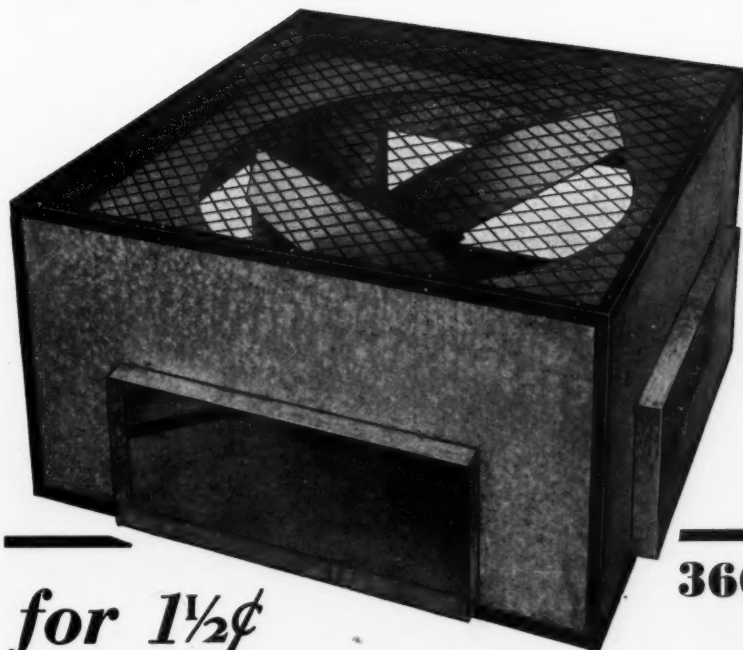
You can read the complete story of this
money-saving modern alloy—and what other
sheet metal contractors have done with it—in
the 64-page book, "The Path to Permanence."
Write for your copy today.



REPUBLIC STEEL CORPORATION

GENERAL OFFICES  YOUNGSTOWN, OHIO

Summer Cooling the Entire House at Low Cost



HOLD-HEET GIANT Nite-Fan

Trade Mark

for 1½¢
per hour

360,000 cu. ft. per hour
absolutely silent

- - the cooling rate of 20, 100-lb. electric refrigerators

BRAND NEW— yet thoroughly proven in principle and operation. Not an attic ventilator, but a house cooler with a capacity cooling rate of 20, 100-lb. electric refrigerators combined.

University of Illinois Research, started in 1932 showed that 43 tons of ice were required to maintain ideal temperatures in all rooms of the average house during a summer season. At 50¢ per hundred the quantity of ice would cost \$430.00. It was further determined that with a large exhaust fan, capable of giving at least 17 complete air changes per hour during the night, that a cooling effect equal to the melting of 33 tons of ice can be obtained during the same period. By drawing this great volume of night air (at least 20° cooler than daytime maximum) through all parts of the

house continuously from 9:00 P. M. till 6:00 A. M., a fan of this capacity reduces rooms, walls, and furnishings to the night temperature. The low morning temperature, coupled with the capacity of walls and furnishings to absorb heat entering the house during the day, keeps the indoor temperature from rising with the outdoor.

Now Silence, Capacity, and Efficiency

The general use of night fans in the past has been restricted by the following factors: 1. Lack of Sufficient Capacity. 2. Noisy (would not permit sleep). 3. Lack of pressure fans that would deliver against the wind or with duct systems. 4. High Speed noisy motors and drives. 5. Improper Installation. Now comes the HOLD-HEET Giant Nite Fan that will exhaust up to 360,000 cu. ft. of air per hour against .1-in. static pressure—from 17 to 20 times the cubic content of the average home. . . the only absolutely silent fan of "giant" capacity (patented). Operated by the patented 12-pole Ballentine capacitor

motor it cools at the rate of 20, 100-lb. electric refrigerators, for but 1½¢ per hour. The HOLD-HEET Giant Nite Fan comes in a steel cabinet, is placed over attic stairway or is connected to upstairs rooms by short ceiling ducts. Air drawn from the house is discharged through attic windows or ventilating louvers in the attic.

Installation Cost and Operating Cost LOW

Costing but a fraction of other cooling systems, easy to install and operating for but 1½¢ per hour. The Hold-Heet Giant Nite Fan makes Summer Cooling practicable for the average home. It opens a vast new market, a spring and summer market for heating men. With the rest of the Hold-Heet Units it is your great opportunity for profit.

In Cabinet--Ready to Install

Hold-Heet Giant Nite Fan comes complete with slow-speed, direct connected 12-pole ½ h.p. Ballentine capacitor motor, 100 speed control and switch mounted in a steel cabinet 48" x 48" x 24".

\$132.00
FACTORY LIST PRICE

The Hold-Heet Unit Plan of Complete Winter Air Conditioning and Summer Cooling.

For Furnace Heated Home*

Unit Number	Factory List Price
No. 1 The HOLD-HEET SYSTEM ("Automatic Heat" with stack control)	\$29.50
No. 2 HOLD-HEET Automatic HUMIDITY (for entire house)	35.20
No. 3 HOLD-HEET Air Conditioner (filters air, forces heat distribution)	112.50
No. 4 HOLD-HEET GIANT NITE FAN (cools entire house)	132.00

Total Equipment Cost.....\$309.20
All units are individually complete, are independent in action, yet are coordinated to give Complete Winter Air Conditioning and Summer Cooling without waste or duplication of controls, equipment or installation expense.
*For the Boller Heated Home
Total Equipment Cost.....\$286.50

Just
Pin This
Coupon
to Your
Letterhead



Liberal discounts
for dealers and
jobbers

RUSSELL ELECTRIC CO., Mfrs.
342 W. Huron St., Chicago, U. S. A.

SEND FREE ☐ Cooling with Fans
☐ Hold-Heet Giant Nite Fan
☐ Hold-Heet Unit Sales Plan

Signed

Firm Name

Address

City..... State.....

Covering All Activities
in
Gravity Warm Air Heating
Forced Warm Air Heating
Sheet Metal Contracting
Air Conditioning
Ventilating
Roofing

AMERICAN ARTISAN

With which is merged

**FURNACES
AND
SHEET METALS**

AND

**Warm-Air
Heating**

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This heating contractor has devised excellent methods of stimulating sales of oil burners in the summer. His methods are presented.	
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More than 7,000 copies of this issue are being distributed.

WHY NOT
Sell
THE
BEST-KNOWN
BRAND
?

OTHER conditions being equal . . . the product marked with a well and favorably known name is easier to sell. That is an established fact, one which successful



merchants recognize and use to their advantage in a dollars-and-cents way.



AND . . . that is why many successful sheet metal contractors use and sell Anaconda Copper. This best-known brand is accepted by the public generally as the standard of sheet metal quality.

When you push Anaconda Copper, you make *your* selling job easier. At the same time you provide your shop with metal that reflects the fine quality of your workmanship.

Leading supply houses carry Anaconda Copper in sheets and rolls, also copper gutters, leaders, elbows and shoes identified with the Anaconda trade-mark.

THE AMERICAN BRASS COMPANY
General Offices: Waterbury, Connecticut

ANACONDA COPPER

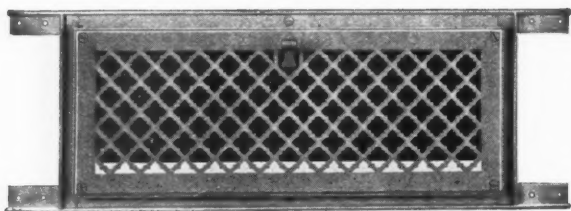



\$3,200,000,000 FOR NATIONAL HOUSING

Get Your Share of It!

NEW

H & C FORCED AIR REGISTERS Absolutely Streak Proof



(No. 3331 Register Illustrated)

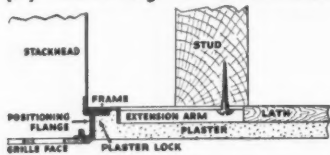
Provide Many Advantages

(A) Frame and stackhead are completely imbedded in plaster—an air-tight installation in which there can be no streaking.

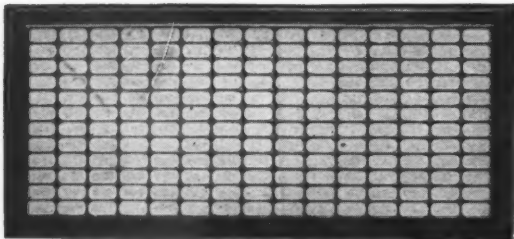
(B) Frame provides positive plaster lock—plaster cannot pull away from frame.

(C) Frame-supporting extension arms are of sufficient length on all sizes to fasten to studs without any blocking in—thus providing solid base for stackhead.

(D) Each register is furnished with waterproof cardboard shield which, installed instead of grille during plastering, prevents plaster from getting inside frame or stackhead.



(E) Each register and intake in our very complete Forced Air Line is available in four attractive grille designs. Write for catalog.



Left:

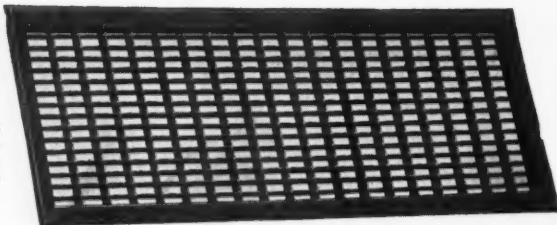
NO. 255 COLD AIR FACE

This sturdily constructed Pressed Steel Cold Air Face is by far the most popular on the market.

Right:

NO. 265 COLD AIR FACE

For those who prefer the grid type construction. No. 265 offers a number of superiorities—narrow mesh; invisible corner seams; and unusually large air capacity.



Three billion, two hundred million dollars is the tremendous sum made available to the home building industry by the NATIONAL HOUSING ACT, for modernization, repairs and new homes.

Housing Administrator Moffett estimates that \$500 millions of *private funds* will be at work by Fall!

By all means, Mr. Installer, step out and get your share of this new business NOW. And, don't neglect to place your fall stock order for registers immediately so you will be able to handle this business to greatest advantage. Quantity orders will net you worthwhile savings!

Concentrate on the H & C Line where you can rely on getting the finest register for every type of installation. **ACTION NOW will pay good dividends.**

HART & COOLEY MFG. CO.

CAST AND
STEEL

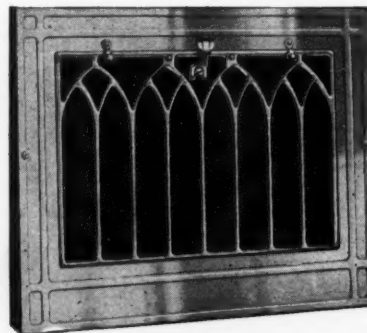


WARM AIR
REGISTERS

GENERAL SALES OFFICE 61 W. KINZIE STREET, CHICAGO

New York, 101 Park Ave.
Philadelphia, 1600 Arch St.

Boston, 6 Beacon St.
New Britain, Conn.

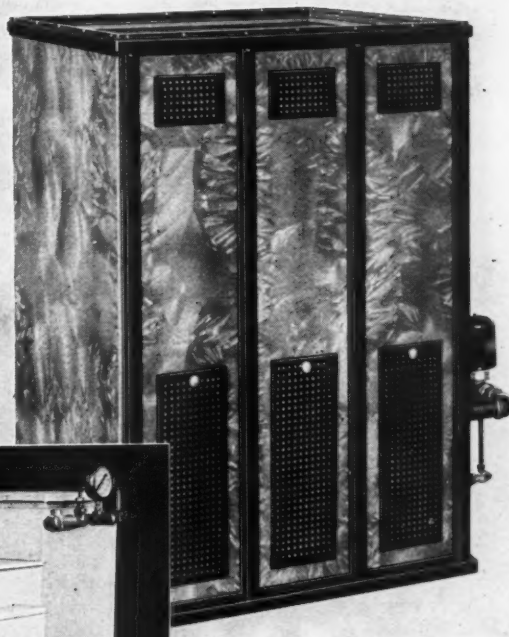


NO. 110 BASEBOARD REGISTER

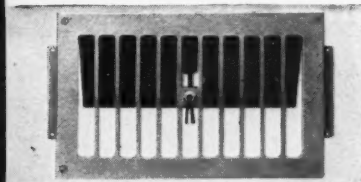
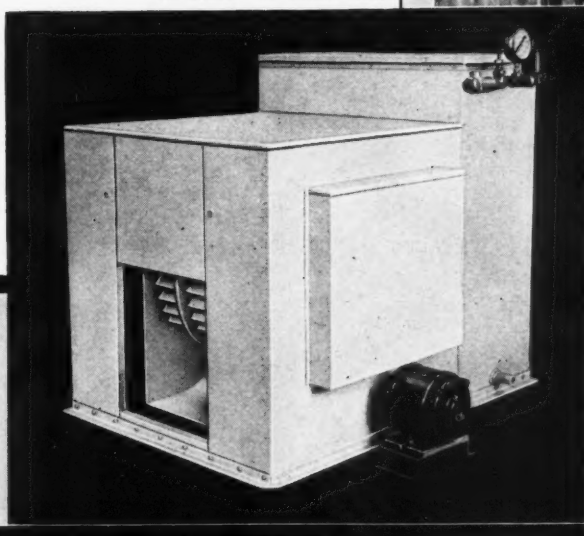
Exceptional attractiveness, sound construction, and fine finishes continue to win customers for this extremely popular register. Its companion Series No. 120 permits lapping the stackhead over the frame.

How Inland Sheets Have Helped in Air Conditioning

Below: Air conditioning unit
for homes—of Inland Steel



Gas-burning furnace given attractive ap-
pearance and quality with Inland Steel



Register stamped from Inland Sheets

THE "made-weather" industry offers an example of how Inland keeps pace with the most modern needs for steel.

Back when man attempted to do nothing about the temperature of the air except to endeavor to keep warm, furnace and stove manufacturers found Inland a satisfactory source for steel. And now manufacturers and installers of the equipment which promises to make weather man-controlled in home and office find valuable help at Inland.

They secure the results of most modern equipment, of minute care, of experience not only in the making of steel to difficult requirements but in its application. INLAND STEEL COMPANY, 38 S. Dearborn Street, Chicago, Ill.



1500 tons of Inland Galvanized Steel Sheets were used for ducts in the new Chicago Post Office.

INLAND
ABLE SERVANT OF THE CENTRAL WEST
STEEL

Sheets Strip Tin Plate
Plates Structural Piling

Rails Track Accessories
Bars Rivets Billets

Hunt for Jobs in Textile Mills



Illustration shows three of a total of eighteen Monel Metal tank linings made by the G. Hofer and Sons Co., Toledo, O., for the Textileather Corp., also Toledo. These Monel Metal linings are fabricated of No. 20 gauge full finished Monel Metal sheet, the corners being lock seamed and silver soldered inside, and soft soldered outside,

lands big order... for 18 Tank Linings!

G. Hofer & Sons show how to build up sales among bleacheries, dye-houses and finishing plants

THERE are jobs to be had from textile manufacturers by the sheet metal man who goes after them. That's the lesson of the picture above.

Those three tanks are just one-sixth of the order one live contractor landed by a combination of head work and leg work.

Take your phone book and look up the firms in your locality that are listed under any of these headings: Dye-houses, Bleacheries, Silk Mills, Knitting Mills, Hosiery Mills, Textiles and so on.

Then go out and talk to the Superintendent. But before you go, arm yourself with information about his work. He is interested in tanks, tank linings, vat linings, table tops, ventilating hoods and ducts, baffles, dry cans, plant trucks,

and even buckets and dippers provided they won't rust, won't corrode, won't wear out. In a word, he wants these items made of Monel Metal.

He knows that Monel Metal is strong, tough, and durable. He knows it is a solid metal with no coating to chip or peel. He knows that it doesn't absorb dyes, and is easily cleaned. (That's important in the textile mill where they have to make a lot of changes in colors.)

But he may forget some of these facts about Monel Metal, and you will help yourself to land an order if you remind him about them and tell him that you

are prepared to build the Monel Metal equipment he needs.

Monel Metal advertising is constantly being printed in all the textile magazines, but these are busy days for many textile superintendents...so your own steady-going man-to-man selling is needed to bring orders into your shop.

They're often big orders, and well worth working for. Why not start out after them today and keep after them until you have covered every textile mill and dye plant within reach!

THE INTERNATIONAL NICKEL COMPANY, INC.
67 WALL STREET NEW YORK, N. Y.

See the INCO Exhibit
MONEL METAL Household Appliances
at A Century of Progress, Chicago, 1934
Home Planning Hall



Monel Metal is a registered trademark applied to an alloy containing approximately two-thirds Nickel and one-third copper. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

Monel Metal





AMERICAN ARTISAN

Code Progress

The Code of Fair Competition for the sheet metal, roofing, warm air heating, air conditioning and allied industries became effective May twenty-fifth. As

this issue goes into the mails, the industry has had eleven weeks in which to set up the necessary organization to make the code effective.

What progress has been made?

We attempt in this issue to show where organizations have been set up. Every available means has been used to gather the data presented. It is not complete, but it does, we believe, show the major activities to date.

Of interest, we feel, is the map which demonstrates how active associations have taken hold of the code program and established the necessary subdivisions to make code application practicable. Areas not under an active state or area association do not in general show up as well as the association areas. We know, but cannot show because final organization has not been perfected, that other areas under active associations are just about ready to announce their set-ups.

Many interesting facts were brought to light while gathering the data presented. One of the interesting facts relates to the lethargy reported from many parts of the country. Contractors say—"I don't believe in this thing, when you get organized let me know." Several groups reported that associations put together in the first enthusiasm for code work have fallen apart because action was not forthcoming. To instill enthusiasm in such localities will be difficult.

Another interesting fact relates to the ways and means of assessing the cost of code application. Some groups have set up their machinery and prepared budgets which mean a per firm cost of twenty-five dollars or more. What will the little shops do when their bill is presented. We don't know.

Without doubt cost is going to play an important part in the industry's reaction. If costs are in line with benefits received such costs will be paid

cheerfully. If costs are too high there is going to be complaint if not downright rebellion. Costs must be kept down. Expensive offices and machinery must be eliminated.

Is the progress made to date satisfactory?

Many say no—and go further to say it won't be. We believe that progress has been remarkably good. We shouldn't expect to see such a revolutionary program perfected 100 per cent over night. Better go slow and do the job right than jump in over our heads and have to undo all that has been accomplished.

Careful consideration of the many problems involved—the cost of compliance, the most workable divisions, fair representation, workable programs are needed. Time should be secondary to these.

▲ ▲

Business Pickup

Numerous letters have been received lately asking if business is really getting better. The writers of these letters are not certain in their own minds that the conditions they encounter really indicate better business. Some writers seem afraid to trust their own experiences.

Without trying to set ourselves up as prognosticators we do think things are improving. Statistical indices of business report better business in many lines, particularly those related to retailing.

We believe that our own industry—the construction field—has not yet felt the full impetus of improved sales as have some other lines of business. As far back as three years ago we stated that the construction industry was one of the last to feel bad times, that we fell farther than most activities and that we probably would be among the last to improve. Other lines are on the upgrade—now it's our turn.

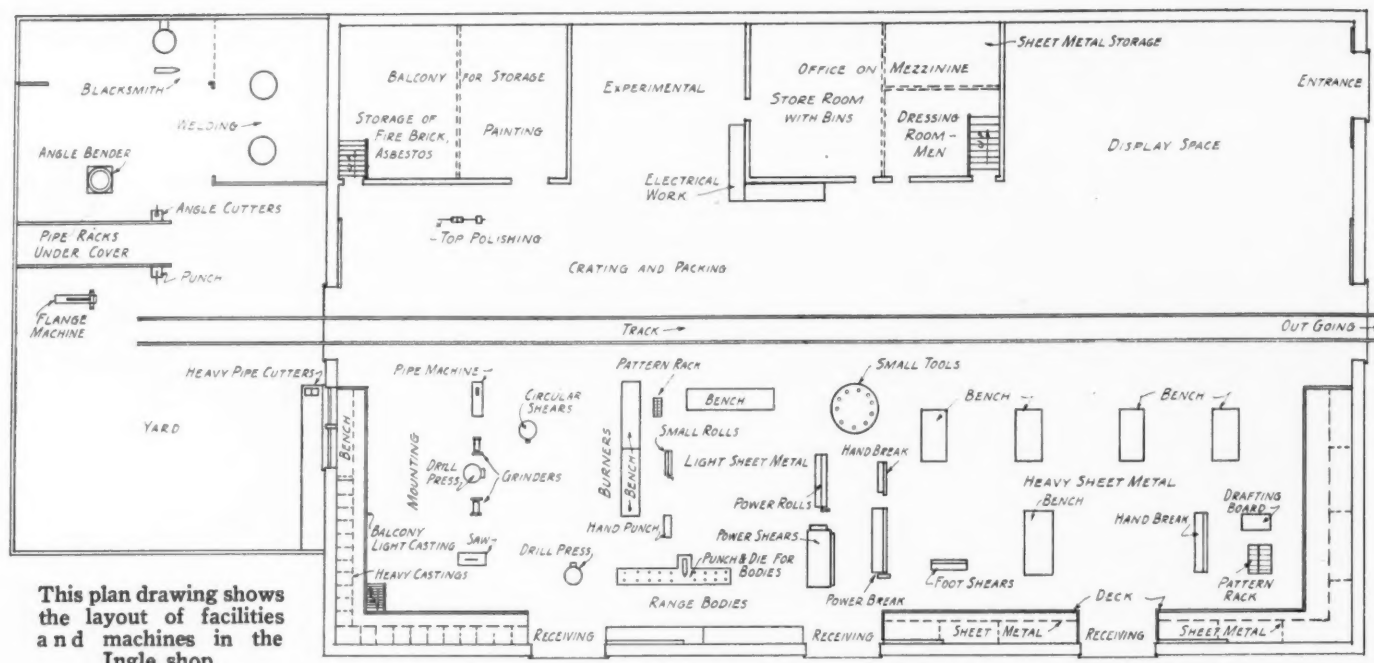
We see no reason to change the assertion made frequently in these editorials that new construction is something to be looked forward to, but not counted upon too heavily.

Remodeling, reconstruction, repair are and will be for many months the bread and butter of our business. This applies to warm air heating, air conditioning, sheet metal work, ventilation, blow piping, roofing and all the other activities of our field of activity.

We can no more sit down and wait for new business than we could last year or the year before. In the repair, remodeling and reconstruction market business comes to those who go out after it. People have to be sold; they do not voluntarily buy except under the urge of necessity.

No one doubts that we have the things practically every owner of property needs badly. People need new furnaces, winter and summer air conditioning, new roofs, home repairs; industry needs better ventilation, repair of existing or idle systems, shops long shut down need everything around the plant put in workable condition.

Business is improving, but the need for salesmanship is not a whit less this month than last year.



Ingle, of San Diego, Has Blanketed the West Coast With Their Fabricated Products

By Findlay M. Drummond
President, Ingle Mfg. Co., San Diego, Cal.

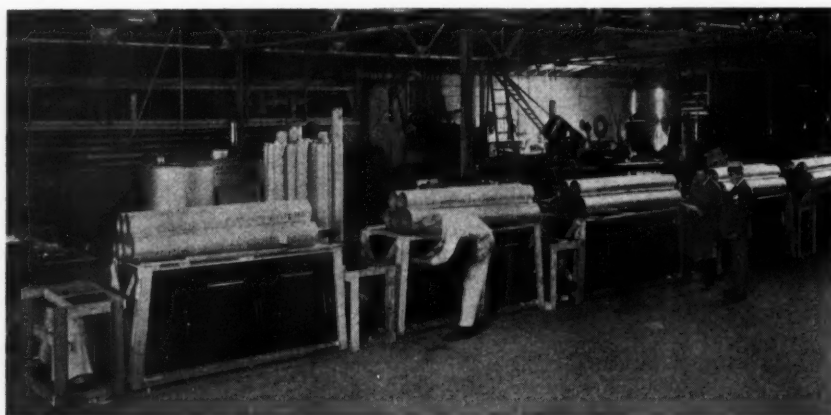
IN THESE days of keen competition (there are 27 sheet metal shops competing with us in one line or another in our home city) most sheet metal shops whether large or small have experimented with or have in production the fabrication of specialty items ranging from simple boxes and pans to the most elaborate service equipment. Our firm, the Ingle Manufacturing Company, began as a sheet metal shop making a specialty item or two at random, but soon found that we could make many items at a cost which enabled us to expand this activity of our business and fill in those gaps which run overhead up so high and bring gray hairs to the shop owner.

Ingle Products

In the years since we first began making these specialties our schedule of such items has grown until today we are making so many products that it has become necessary to

devote a definite part of our shop and our force to the production of the more important and steadiest volume units. I might list these products as follows: Steamtables, sinks, dish dumps, canopies; Sinks and drain boards for private dwellings; Meat and fish packing house stainless steel gutting, cutting and sausage tables; Special dipping baskets of high resistance to concen-

trated or strong acids for aluminum cans; Smoke house doors and dairy sterilizer room doors; laundry trays and wash basins for navy destroyers; Galley bulkhead linings on destroyers, merchant marine and private yachts; Fish boat galley wall linings and range hoods; Dining room tables and table tops; Covered or solid top mess tables on vessels; Oil burning ranges with hinged lay

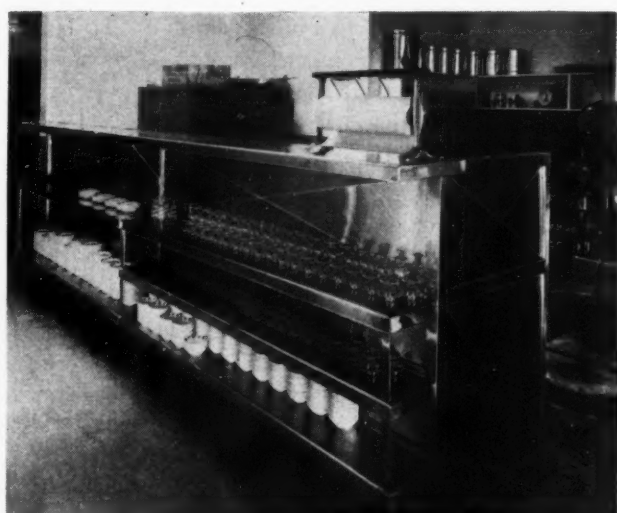




Entrance and exterior of the Ingle building. Large signs denote the various products fabricated.



Above—Monel metal wash bowl stand on U. S. destroyer. The mirror frames are also Monel.



Above—Pastry and ice cream service counter for the Foreign Club, Tijuana, Mexico. The stainless steel exterior is assembled on a welded angle iron frame.



Right—Stainless steel meat cutting table having welded angle-iron frame, wood cutting board and back board for cut product.

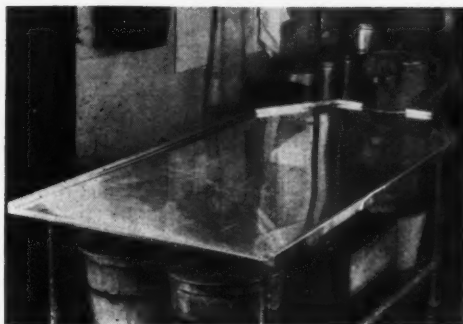


Above — Complete kitchen equipment for the Casino, Tijuana, Mexico. All stainless steel.

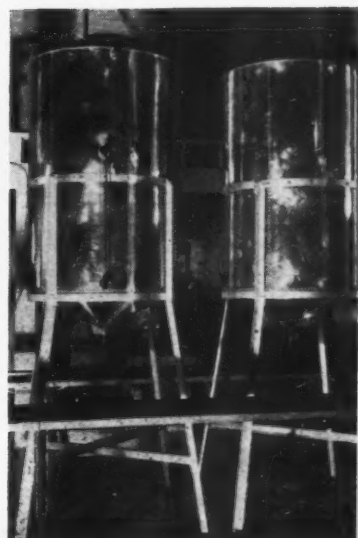


Above—Oil burning galley range, fishing boat "Invader," with stainless steel shelf, full nickel trim. Exterior is black iron.

Below—Stainless steel sausage table on pipe frame (all welded).



Below—Air tight copper wine settling tanks completely tinned on inside.



Our National Code Authority



Charles A. Earley

39 Carleton St., Cambridge, Mass.

ZONE 1: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut.

HISTORY: Affiliated with sheet metal industry over 20 years. Treasurer, Cavanaugh & Earley, Inc., one of the principal operators in general roofing and architectural sheet metal work in greater Boston. President of the Master Sheet Metal & Roofers Association of Boston.

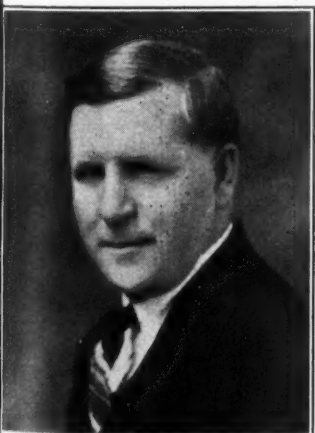


W. C. Markle

429 Fourth Ave., Pittsburgh, Pa.

ZONE 5: Western Penna., Ohio, West Virginia, Western Maryland, Michigan.

HISTORY: Secretary-Treasurer, Raster & Dinger Co., Pittsburgh. Became apprentice in sheet and metal shop in 1887. Secretary, National Association of Sheet Metal Contractors since July, 1926. Secretary-Treasurer, Roofing and Sheet Metal Industries Conference. Secretary-Treasurer, Code Authority.



H. Stanyer

2422 Alamo St., Dallas, Texas

ZONE 10: Louisiana, Arkansas, Texas, Oklahoma, New Mexico, Arizona.

HISTORY: Connected with the warm air heating and sheet metal industry for over 20 years. President and General Manager of the Dallas Heating and Ventilating Company, Dallas, Texas. This company does all classes of sheet metal, heating, ventilating and air conditioning work, also slate roofing. Immediate past president, National Association of Sheet Metal Contractors.



J. Boyd Griffiths

209 Water St., Binghamton, N. Y.

ZONE 2: New York State.

HISTORY: In roofing and waterproofing industry over 22 years. Treasurer and Assistant General Manager, Binghamton Slag Roofing Co., Binghamton, N. Y., one of the largest and oldest roofing and sheet metal companies in that territory. Director (President 1930-1931) United Roofing Contractors Association of North America. Member of Steering Committee of Roofing and Sheet Metal Code.



Walter P. Budd

Durham, North Carolina

ZONE 6: Virginia, North Carolina, South Carolina.

HISTORY: Secretary-Treasurer, Budd-Piper Roofing Company, Durham, N. C., organized in 1914. Graduate Trinity College (now Duke University), Durham, N. C., year 1904. President Durham Industrial Bank. Rotarian. Past-president Tri-State Sheet Metal & Roofing Contractors Association. Member, National Association of Sheet Metal Contractors.



D. A. Jackson

1045 W. Jefferson Blvd., Los Angeles, Calif.

ZONE 11: Washington, Oregon, Idaho, California, Nevada, Utah.

HISTORY: President of the Atlas Roof Company, roofing contractors, Los Angeles. Vice-president, California Master Roofers' Association. Director, United Roofing Contractors Association.

[B. L. Hinkle, Elected for Zone 7, has resigned.]



George Brown

413 Twentieth St., Brooklyn, N. Y.

ZONE 3: New York Metropolitan Area.

HISTORY: Age 59. Identified with sheet metal and roofing industry for 37 years. Member of the firm of Craig & Brown, Brooklyn, N. Y. Organizer of United Employers' Association of Roofers and Sheet Metal Workers. Member Trade Agreement Committee, sheet metal and slate.



Otto A. Wendt

2124 Southport Ave., Chicago, Ill.

ZONE 8: Kentucky, Indiana, Illinois, Eastern Missouri, Iowa, Wisconsin, Minnesota.

HISTORY: Partner, Wendt & Crone Co., Chicago. Entered small shop doing sheet metal, roofing, skylight, cornice and furnace work as an apprentice at fifteen. Took over ventilating department of Mehring & Hanson Company, Chicago, in 1911. Formed own company in 1922, later expanded and formed Wendt & Crone Company, operating as heating, ventilating and air conditioning contractors.



Godfrey M. Olson

682 South 12th St., Newark, N. J.

Authority-at-large for re-roofing and re-siding contractors.

HISTORY: Firm of Olson Roofing Co., main office, Atlantic Highlands, N. J., branches in Newark, Hackensack, Asbury Park, N. J. Since 1918 in roofing firm founded by father (S. A. Olson). In 1923 firm made a partnership under name G. M. Olson & Co. Present firm incorporated in 1925.



W. Roy Eichberg

4210 Sansom St., Philadelphia, Pa.

ZONE 4: Eastern Penna., New Jersey, Maryland, Delaware.

HISTORY: Entered heating and ventilating industry in 1905 at Cincinnati, Ohio, with Peck-Hammond Company. In 1923 organized the American Heating and Ventilating Co. of North Carolina at Raleigh. Also organized the Carolina Sheet Metal Corporation. In 1927 moved Carolina Sheet Metal Corp. to Philadelphia. President, Ass'n of Roofing Metal and Heating Engineers of Philadelphia.



Walter H. Miller

21st & Forest Ave., Kansas City, Mo.

ZONE 9: Western Missouri, Kansas, Nebraska, South Dakota, North Dakota, Montana, Wyoming, Colorado.

HISTORY: Affiliated since 1903 with Kansas City Slate & Tile Roofing Co., of which company he is secretary-treasurer. Company does slate and tile roofing exclusively. Past-Chairman and at present Member of Executive Committee, National Slate Association. Member, Board of Directors, United Roofing Contractors Association.



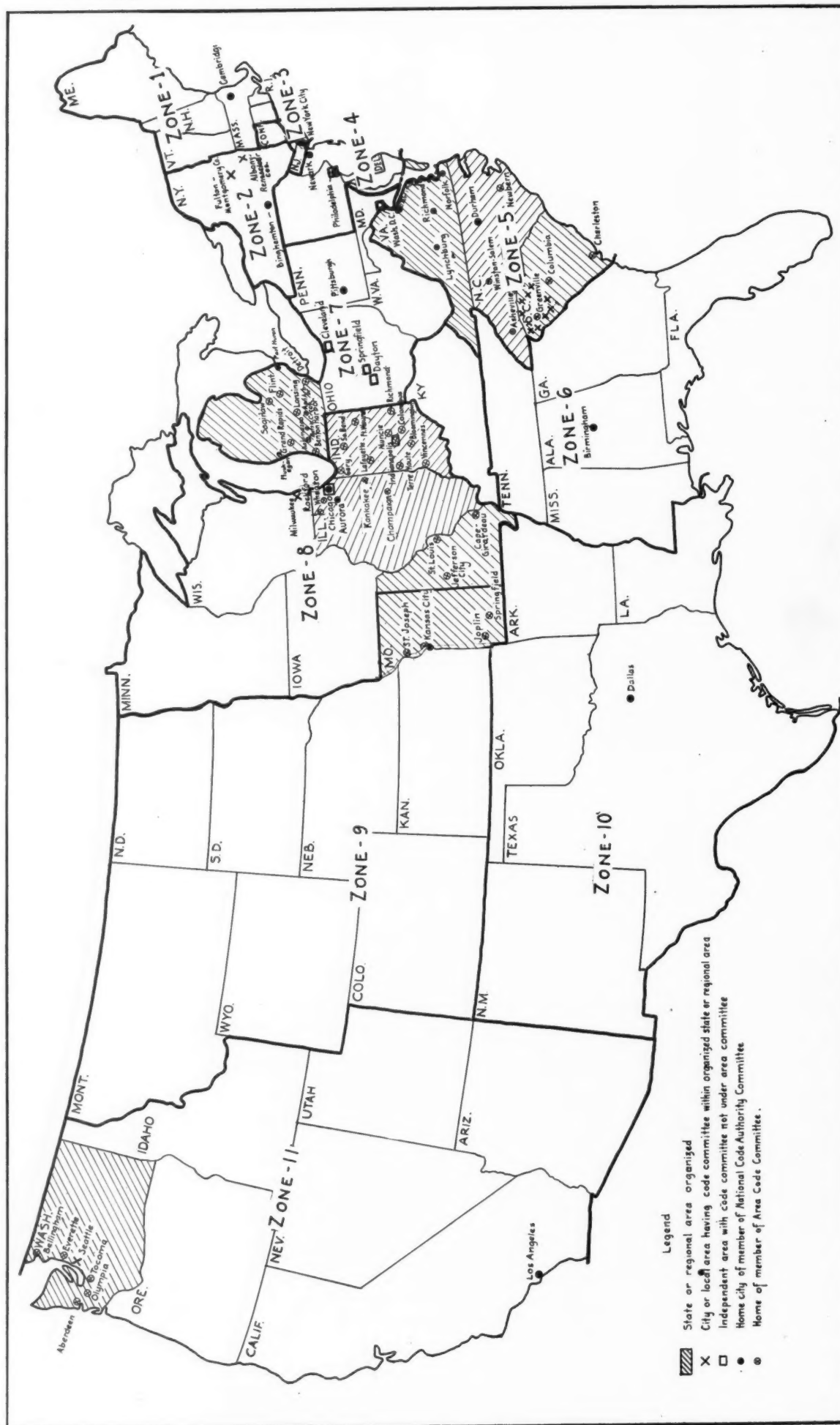
Jack Stowell

133 Galena Blvd., Aurora, Ill.

Authority-at-large: Representing furnace contractors.

HISTORY: Age 36; entered industry as apprentice in 1920. Specializes in furnace work, but also does general sheet metal, tile and slate roofing. Contractor representative and member, Code Committee, National Warm Air Heating & Air Conditioning Assn. Vice-president, National Assn. of Sheet Metal Contractors. President, Fox Valley Furnace and Sheet Metal Contractors Ass'n. Special Representative, National Warm Air Heating Ass'n, 1929, 1930, 1931, 1932.

Regional and Local Code Authority



This map shows those states or regions where a regional or state code authority committee has been elected. The home cities of the members of such regional committees are also indicated. The eleven zones into which the country is divided are indicated by heavy borders and the home city of the zone member of the national committee is shown. Numerous independent areas having local code authority committees are given. For full explanation refer to the report following.

Committee Organization Reported To Date In American Artisan's Survey

THE map on the facing page shows the eleven zones into which the country has been divided. For each of these major zones a representative has been elected to the National Code Authority Committee for our industry. This national committee has been approved by NRA. A recent ruling makes each national committeeman responsible for the organization of local committees in his zone. Photographs of the members of the national committee and their addresses are shown on page 13.

Questionnaires mailed to dozens of associations indicate that at present Missouri; the Tri-States of Virginia, North Carolina and South Carolina; Washington, Michigan Indiana and Illinois have organized regional code authority areas and elected regional committees.

In addition to these regional setups and committees, numerous counties, cities or local areas, have organized local areas and local code authority committees.

Following are the names and addresses of committeemen of these regional and local committees.

Regional Code Authority Committees

Missouri

(Code area—State of Missouri)

R. C. Richardson, St. Louis, chairman, (representing sheet metal work).
Andrew Zahner, Kansas City, Vice-chairman, (representing sheet metal work).

Luke Tiernan, St. Louis, Secretary, (representing sheet metal work).

A. J. Shirk, Kansas City, Treasurer, (representing roofing).

Clyde Raymond, Springfield, (representing sheet metal work).

C. F. Sappenfield, Jefferson City, (representing sheet metal work).

L. Baumgardner, Cape Girardeau, (representing sheet metal work).

Wm. Seaman, St. Joseph, (representing sheet metal work).

C. A. Kirberg, St. Louis, (representing slate and tile).

Leo Morgan, Joplin, (representing roofing).

Indiana

(Code area—Indiana)

Charles L. Gatz, Gary district (Lake, Porter, Newton, Jasper counties).

J. A. Harris, South Bend district (La Porte, Starke, Pulaski, Fulton,

Marshall, St. Joseph, Elkhart, La Grange counties).

Wm. C. Huguenard (Kosciusko, Wabash, Huntington, Whitley, Noble, Allen, DeKalb, Stueben, Adams, Wells counties).

Charles Roland, Richmond district (Henry, Rush, Decatur, Ripley, Switzerland, Ohio, Dearborn, Franklin, Fayette, Union, Wayne counties).

Louis Lehnen, Lafayette district (Benton, Warren, Fountain, Montgomery, Tippecanoe, White, Carroll, Clinton, Cass, Miami, Howard counties).

L. E. Heitger, Bloomington district (Owen, Greene, Monroe, Brown, Martin, Lawrence, Dubois, Orange, Crawford, Perry, Harrison counties).

A. T. Wells, Muncie district (Tip-ton, Grant, Madison, Delaware, Blackford, Jay, Randolph counties).

Clarence Watson, Vincennes district (Knox, Davies, Pike, Gibson, Posey, Vanderburg, Warrick, Spencer counties).

Wm. Loesch, Columbus district (Bartholomew, Jackson, Jennings, Washington, Scott, Clarke, Floyd, Jefferson counties).

A. E. Hartmann, Terre Haute district (Vermillion, Parke, Putnam, Vigo, Clay, Sullivan counties).

Elmer R. Mullin, Indianapolis district (Marion, Hendricks, Hancock, Morgan, Johnson, Shelby, Hamilton, Boone counties).

Tri-State

(Code area—Virginia, North Carolina, South Carolina)

For Virginia

W. A. Garlette, Norfolk.
Reuben Burton, Richmond.
H. L. Goosby, Lynchburg.

For North Carolina

W. H. Arthur, Asheville.
George Alee, Newburn.
O. R. Eedycord, Winston-Salem.

For South Carolina

J. A. Piper, Greenville.
R. B. Spell, Charleston.
W. T. Hartin, Columbia.

Illinois

(Code area—Illinois)

J. A. Miedema, Wonder Heating and Ventilating Systems, 12011 Union Ave., Chicago (representing furnace, air conditioning, cooling, contractors).

F. T. McCabe, Wheaton Sheet Metal Works, 105 E. Front St., Wheaton (representing furnace, air conditioning, cooling contractors).

Frank Reuter, Henry Reuter & Sons, 151 South West Ave., Kankakee (representing furnace, air conditioning, cooling contractors).

N. C. Dexter, N. C. Dexter Sheet Metal Works, 543 W. 120th St., Chicago (representing metal windows, doors, cornices, skylights and general sheet metal work).

Ed. Bentz, Bentz Sheet Metal Works, 2401 11th St., Rockford (representing metal windows, doors, cornices, skylights and general sheet metal work).

Fred S. Bremer, 2629 W. Harrison St., Chicago (representing metal windows, doors, cornices, skylights and general sheet metal work).

James Walsh, Elaborated Ready Roofing Co., 4417 Wentworth Ave., Chicago (representing roofing, re-siding, water-proofing, damp-proofing, insulation contractors).

Ben Berry, Ben Berry Co., 6236 S. Racine Ave., Chicago (representing roofing, re-siding, water-proofing, damp-proofing, insulation contractors).

Chris McKeon, Standard Roofing Co., 1623 W. Lake St., Chicago (representing roofing, re-siding, water-proofing, damp-proofing, insulation contractors).

Wm. C. Ashley, Wolff Bros., 1330 Congress St., Chicago (representing ventilating, air conditioning contractors).

Walter Mech, Twin City Roofing Co., Champaign (representing slate, tile, asbestos shingle roofing).

Washington

(Code area—Western Washington)

Edward Flohr, Seattle.
Walter Zainey, Seattle.
Angus Buchanan, Seattle.
George Gehri, Tacoma.
Dayton Maltby, Tacoma.
B. E. Bergeson, Everett.
F. E. Laube, Bellingham.
W. J. Losli, Aberdeen.
M. W. Tobin, Olympia.

Michigan

State Administrative Committee

(Code area—State excluding Peninsula)

Thomas Marshall, Detroit (representing sheet metal, built-up, tile, slate roofing).

F. Gillespie, Detroit (representing reroofing).

John Clark, Detroit (representing small sheet metal, furnace, built-up shops).

John Erhardt, Grand Rapids (representing built-up, tile, slate roofing, sheet metal and ventilating).

Arthur Lange, Saginaw (representing small sheet metal shops).

Robert Sykora, Benton Harbor (representing small sheet metal, furnace, built-up, tile and slate roofing).

George Wacker, Lansing (representing furnaces, small sheet metal shops).

Frank Westover, Flint (representing furnaces).

Michigan

State Administration Board
OFFICERS

President, Wm. P. Sullivan, 1559 E. Hancock, Detroit, Mich.

Vice-president, James Hage, 14th and Beach Sts., Flint, Mich.
Secretary-treasurer, F. E. Ederle, 200 Ionia N. W., Grand Rapids, Mich.

BOARD MEMBERS

Second District—Saginaw and Bay City

Adam Schepper, 221 S. Water St., Bay City, Mich.

Third District—Port Huron
William Dart, 525 Quay St., Port Huron.

Fourth District—Flint
James Hage, 14th and Beach Sts., Flint.

James Westover, 706 W. Third Ave., Flint.

Fred Hossie, 642 Harrison, Flint.
Fifth District—Lansing
E. H. Ward, 1100 Cowles St., Lansing, Mich.

Sixth District—Grand Rapids
Martin Vander Zee, 1423 Pine N. W., Grand Rapids, Mich.

Seventh District—Muskegon
John Bos, 422 Apple St., Muskegon, Mich.

Eighth District—Benton Harbor
R. J. Sykora, 8th and Elm Sts., Benton Harbor, Mich.

Ninth District—Kalamazoo
Harold Hoekstra, 1031 W. Patterson St., Kalamazoo, Mich.

Tenth District—Battle Creek
Bert Goslin, Sherriff-Goslin Co., Battle Creek, Mich.

Eleventh District—Jackson
Maurice Campbell, 105 S. Goram St., Jackson, Mich.

Twelfth District—Ann Arbor
Edw. R. Muehlig, Muehlig & Lamphair, Ann Arbor, Mich.

Fourteenth District—Detroit and Pontiac

Wm. P. Sullivan, 1559 E. Hancock, Detroit, Mich.

Edw. Kavanaugh, 1314 Michigan, Detroit, Mich.

John S. Clark, 8629 Woodward, Detroit, Mich.

Edw. Harrigan, Harrigan & Reid, Detroit, Mich.

Byron F. French, 351 N. Paddock, Pontiac, Mich.

Michigan

District Administrative Committees

District No. 2—Bay City and Saginaw
John W. Gray (Furnace Dealer), Bay City.

Frank C. Mathieu (Sheet Metal Shop), Midland.

John C. McDougall (Roofing, House and Built-up), Saginaw.

Aldes M. Albright (Sheet Metal Shop), Saginaw.

Ernest C. Henry (Sheet Metal Shop), Bay City.

Arthur B. Lange (Sheet Metal Shop), Saginaw.

Francis Jones (Furnace and Sheet Metal Shop), Bay City.

District No. 3—Port Huron

W. J. Dart, 525 Quay St., Port Huron (General sheet metal large and small, tile and slate roofing and furnace contracting).

Henry Clough, 1619 22nd St., Port Huron (Built-up and house roofing).

J. B. Schaller, 1511 Fourth St., Port Huron (Small sheet metal and furnace contractor).

Fred Schlinkert, Schlinkert Supply Co., St. Clair (Built-up and house re-roofing contractor).

J. B. Otis, non-member, Otis Hardware Co., Sandusky (Furnace contractor).

District No. 4—Flint

C. H. Pinny, Randolph Company, Owosso, Mich.

Ross Upper, 802 Margaret St., Flint, Mich.

Wm. Schweitzer, Flint Cornice & Rfg. Co., Beach & G. T. R. R., Flint.

Mr. Larry, Lapeer, Mich.

Lynn Barber, 521 Patterson, Flint, Mich.

District No. 5—Lansing

Edward C. Ewer, Briggs Co., Lansing.

J. K. Rathman, Leslie.

D. J. Cressor, Kalamazoo Stove Co., 1002 S. Pennsylvania, Lansing.

R. E. Benson, St. Johns.

Chas. W. Parish, 107 Lawrence Ave., Charlotte.

District No. 6—Grand Rapids, Mich.

William Craven (House Rfg. Industry), 1154 Alexander St., Grand Rapids.

John Wierenga (Small Sheet Metal Work), 128 Packard S. E., Grand Rapids.

Harry Newcomb, Jr. (Blow Pipe Industry), 526 Monroe N. W., Grand Rapids.

Peter Wierenga (Roofing and Sheet Metal), 49 Coldbrook, Grand Rapids.

A. E. Eckstrom (Steel Roofing), Grant.

John Sweet (Furnace Contracting), 851 Division St., Grand Rapids.

District No. 7—Muskegon

Fred Smith (Sheet Metal), 1179 Williams St., Muskegon.

L. L. Williams (Roofing and Re-roofing), 1301 Williams St., Muskegon.

A. Hartel (Sheet Metal and Rfg.), 119 N. Third St., Grand Haven.

James DeKracker (Furnaces), 1340 Franklin, Grand Haven.

W. J. Stewart (Sheet Metal and Blow Pipe), 849 Pine St., Muskegon.

District No. 8—Benton Harbor

R. J. Sykora, A. T. Hall Company, Benton Harbor (representing large and small sheet metal work, built-up, tile and slate roofing and furnace work).

Frank Schoolcraft, Schoolcraft Sheet Metal Works, Niles. (Representing built-up roofing, small sheet metal and furnace work).

Ed. Hickey, Hartford. (Representing furnace and small sheet metal work.)

N. Scowcroft, St. Joseph. (Representing small sheet metal and furnace work.)

District No. 9—Kalamazoo

William J. Metzger (Furnace and Eavestroughing), 144 N. Edwards St., Kalamazoo.

Harold Hoekstra (Roofing and Sheet Metal), 1031 W. Patterson St., Kalamazoo.

Jacob A. Temple (Commercial and Industrial Sheet Metal), 919 E. Michigan Ave., Kalamazoo.

Leo Biel, Sturgis.

Guy Petrie, Three Rivers.

H. J. Whitcomb, Allegan.

L. Brown, Plainwell.

District No. 10—Battle Creek

Guy Fitzgerald (Sheet Metal), 435 W. Michigan Ave., Battle Creek.

F. A. Brown (Sheet Metal), Hastings.

Frank Gross (Small Sheet Metal and Furnace Contractor), Albion.

Fred C. Kincaid (Furnace Contractor), Battle Creek.

Ernest Rice, Sherriff Goslin Co. (Built-up and house re-roofing contractor), Battle Creek.

D. C. Allen (Small Sheet Metal, Steel Roofing and Furnace Contractor), Coldwater. (Non-member.)

District No. 11—Jackson

Committee not elected.

District No. 12—Ann Arbor

John W. Van Etten, 31 N. Huron St., Ypsilanti (Sheet Metal).

Wm. Kempfort, 906 Canal St., Ann Arbor (Sheet Metal).

George Eiting, 557 S. 7th St., Ann Arbor (Alternate).

Ray Wurster, 714 Coit St., Ann Arbor (Alternate).

L. A. Seegar, 1302 Elder Blvd., Ann Arbor (Heating Contractors).

Mr. Arksey, Steptoe & Arksey, Dexter (Heating Contractors).

Carl J. Henselman, 319 N. Main St., Ann Arbor (Alternate).

Mr. Hartwell, 304 S. Ashley St., Ann Arbor (Alternate).

Ray Hutzler, 221 Felch St., Ann Arbor (Roofing).

D. A. Maxwell, 520 S. 1st St., Ann Arbor (Roofing).

Floy Denay, 602 3rd St., Ann Arbor (Alternate).

M. Schlenker, 213 W. Liberty St., Ann Arbor (Alternate).

District No. 14—Detroit

W. W. Busch, 639 E. Fort St., Detroit.

John Clark, 8629 Woodward, Detroit.

R. C. McKinney, 958 E. Grand Blvd., Detroit.

Edward Harrigan, 1365 Bagley, Detroit.

Edw. Lutz, Pontiac.

William Sullivan, 1559 E. Fort St., Detroit.

Thomas Marshall, Robt. Hutton Co., 622 E. Fort St., Detroit.

Benj. Levitt, 7312 Chicago, Detroit.

Local Code Authority Committees

Washington, D. C.

(Code area—District of Columbia, cities of Alexandria, Va., Montgomery, Prince George, St. Marys, and Charles Counties, Md.; Farquier, Arlington, Fairfax, Loudon and Prince William Counties, Va.)

Charles W. Esterday, 2214 Ninth Street, N. W., Washington, D. C.

P. A. Knox, 1234 24th Street, N. W., Washington, D. C.

J. F. Cavanagh, 3271 "M" Street, N.W., Washington, D. C.

Charles Keene, Ontario Apartments, Washington, D. C.

J. T. Daly, 935 Hughes Court, N.W., Washington, D. C.

W. R. Carpenter, 923 "V" Street, N. W., Washington, D. C.

Lester Rose, Rosslyn, Va.

C. R. Breneman, 610 Eye Street, N. W., Washington, D. C. (secretary).

Philadelphia, Pa.

(Code area—Philadelphia, Chester, Delaware, Montgomery and Bucks Counties, Pa., and Camden County, New Jersey).

W. Roy Eichberg, 4210 Sansom Street, Philadelphia (representing large sheet metal shops).

(Continued on page 57)

..the **problem** corner

Suggestions On February's Problem

Oil Odor

American Artisan:

I noticed in a copy of the American Artisan for February that T. O. W. of Missouri has had exactly the same experience that the writer had relative to a "heywire" oil burner; in other words, I woke up one Sunday morning and found my furnace casing full of raw oil. After I thought I had it thoroughly cleaned I could not get the odor out of the house for several weeks; in fact, I did not do so until

I had the casing removed and placed about two inches of cement all over the basement between the outer casing ring and ash pit. After I had this put in it seemed to entirely absorb the odor.

I am passing this information on to you that you may be able to help your friend from Missouri overcome the same difficulty.

J. M. Triggs,
The Majestic Co.,
Huntington, Ind.

cost I think I can build up a business. Our average home costs from five to ten thousand dollars.

G. B., Texas.

Reply By The Editors

It will be quite a job to answer fully your inquiry on air conditioning in one letter.

You ask what is the prospect of doing summer cooling by installing an air washer. The answer is that an air washer is only a part of the necessary apparatus. The air washer is the housing through which the air is passed to be cooled and this is accomplished by subjecting the air to cold water sprays in the washer. Washers are inexpensive, easy to install and give very little trouble.

However, in order to use a washer you will have to employ one of three cooling mediums—cold water, ice or mechanical refrigeration. If you choose to use cold water you must have water not warmer than 55 degrees Fahrenheit and as much less as possible. We do not know just what temperature deep-well water is in your vicinity but up in our part of the country you can sink a deep well and get 55-degree water in sufficient quantities to cool.

A large number of installations have been made using ice and the investigations at the Research Residence indicate that a house of approximately 15,000 cubic feet will consume almost three tons of ice per day to do a full-house cooling job. Mechanical refrigeration is less messy than any of the others but costs more to buy and probably costs more to run. A curve of cost comparison for ice and mechanical refrigeration will cross at a consumption of about three tons per day and beyond three tons mechanical refrigeration is cheapest.

If you will go back through the articles written last summer by H. J. Macintire, Professor of Refrigeration, University of Illinois, Urbana, Illinois, in the "Air Conditioning" section of AMERICAN ARTISAN you will find a complete discussion of cooling with all the necessary information on how to figure a job and choose equipment.

Sound Absorbers

American Artisan:

We would like information on sound absorbers. The specifications read as follows—"Each duct from cooling unit supplying air to operating rooms shall be enlarged and provided with efficient, odorless, sound absorbing material arranged to effectively absorb sounds from the cooling unit without noticeably increasing the friction loss in the ducts. Material used shall not deteriorate in the presence of moisture. Other portions of duct work shall be lined with sound absorbing material where necessary to damper objectionable noises."

The sound absorbers are shown on the plans in a 16 by 14 inch duct as a box-like contrivance, approximately twice the size of the duct and about 4 feet long.

J. J. N., Tennessee.

iously published material in AMERICAN ARTISAN and, for your perusal, we are sending you under separate cover today a copy of the June 22, 1931 issue containing the sound deadening methods used in a Hollywood sound studio. This article describes in some detail two methods which have proved satisfactory in this difficult installation. We would refer you to the February issue of AMERICAN ARTISAN which describes methods of eliminating machinery noises also some reference to a honeycomb system of duct insulation.

We take it from your letter that you are going to eliminate most of the noise by lining the interior of the ducts with sound absorbing felt and that special chambers are principally in the way of maximum protection. We believe you should have no trouble in selecting a material which is impervious to moisture or heat inasmuch as most of the felt insulating materials made meet this specification.

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How Can I Cool?

American Artisan:

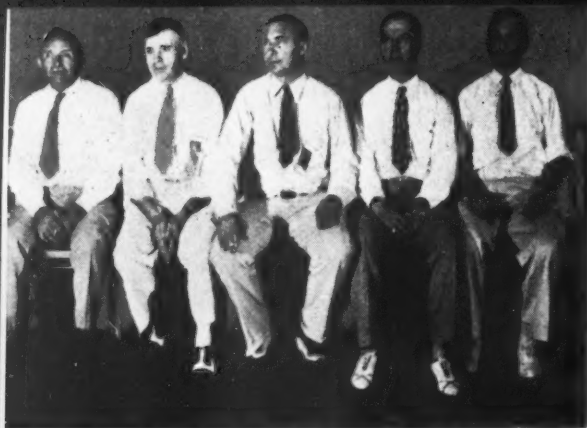
I have never air conditioned a building, in fact there is no one in my city in that line of business. I believe there is a good future here for conditioning, but it will be principally cooling as few houses here have central heating. Our summers are extremely warm. If I can install an air washer with ventilation at reasonable

Reply By The Editors

We find that while there is a lot of data on noise and its origin there is very little information on how to suppress air noises in ducts.

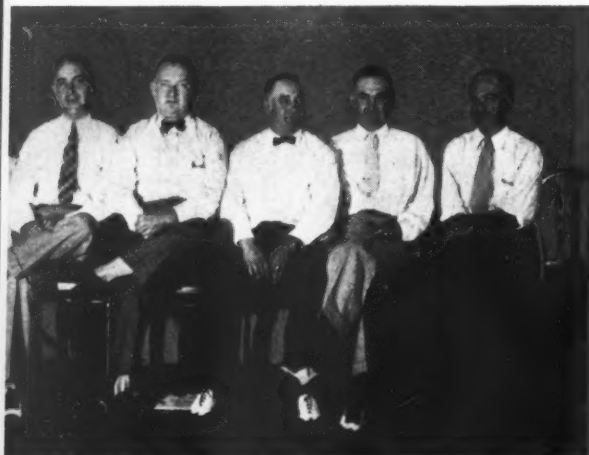
Such reference books as "Fan Engineering" by Buffalo Forge Company, the A. S. H. & V. E. Guide for 1933 and 1934, and various other texts on ventilating give quite a bit of space to the origin of sound but little on how to absorb noise.

This leaves only reference to prev-



DIRECTORS—1934-35

Reading left to right: Joseph Dersher, A. E. Bogen, Carl Gundlach, A. E. Munkel, W. H. Lauer.



AKRON, OHIO

Reading left to right: L. J. O'Connor, A. W. Dickson, H. L. Orton, Oscar Hodgson, W. R. Hickox.



YOUNGSTOWN, OHIO

Reading left to right: James J. Dalzell, G. F. Ackerman, W. L. Leedy, H. E. Owen.

LORAIN COUNTY, OHIO

Reading left to right: A. G. Stimald, Charles Cook, I. M. Kienzie, A. Nabakowski.



Ohio Perfects Plans For Code Organization at 1934 Convention

INDIVIDUAL contractors from all over Ohio and delegates from several active associations throughout the state met in Columbus, July 24, 25 and 26 for the meeting of the Ohio Sheet Metal Contractor's Association primarily for the purpose of ascertaining what progress had been made and what must be done to comply with the code for our industry.

Despite disappointing progress due to inability of the convention to elect a state code authority committee because suitable notification and registration had not been made, the convention gave those attending some very excellent information and an enjoyable time.

Ventilating Fight

Charles Whitcomb, special representative of labor from Washington, D. C., assured the convention that the national labor body would meet dollar for dollar the cost of litigation required to kill the proposed change in Ohio State law making possible the installation of unit heater systems in schools and eliminating present ventilating requirements with their accompanying sheet metal work.

This assurance from the National labor body was enthusiastically received by the convention and in the words of one of the officers—"This assurance of funds will probably mean that Ohio sheet metal contractors can continue to get schoolhouse ventilating work and gives us new courage to carry on this fight which has been in progress for several years."

In discussing code compliance and progress, the assertion was made by Edwin A. Scott, Sheet Metal Worker, that the entire code for our industry is written around Section 4, Article 4, which in brief specifies that work shall not be taken below cost.

The speaker made a plea for more

co-operation by the younger members of the industry and by those contractors who ordinarily do not take an active part in association work.

Mr. Scott emphasized that most of the complaints received to date hinged on the matter of selling below cost and that such complaints emphasize the fact that as yet we do not know what constitutes cost. One of the first jobs to be done, in his opinion, is the setting up of a suitable cost accounting system for large and small jobs so that complaints can be based upon intelligent surveys of cost. The second important job is to prepare budgets for all code areas.

Code Changes

Secretary W. C. Markle outlined the New York City meeting at which time the National Code Authority Committee members were chosen and elected and announced that a new ruling of NRA makes each National Code Authority Committee member responsible for setting up local code committees and makes the national committeemen responsible for compliance in the zone from which he was elected.

In answer to queries from the floor, Secretary Markle declared that he believes just as soon as full code authority committee organization is completed associations as we now know them will pass out of the code picture. Mr. Markle said that this did not mean the elimination of associations because much remains to be done by such groups and, in his opinion, associations can do much to make code compliance profitable and enthusiastic.

In answer to other questions, Secretary Markle declared that where there is no local association, two or even one man may call a meeting, set the place of meeting, date and time and invite to this meeting all contractors in a selected area. These

men attending the meeting may select their delegates for the local code authority committee and send out the registration cards which must be returned from 85 percent of the industry within the area selected. With these registration cards on hand the local code authority committee can be elected and machinery set up to enforce code compliance. Mr. Markle emphasized that every trade in our industry must be represented on the local code committee, but one man may represent one or more classes of activity if all the various classes agree to this man as a representative.

Overhead Report

There were a number of talks of interest and importance delivered at the various sessions of the convention; one of the most interesting was given Thursday afternoon by E. R. Armstrong of Columbus on "Overhead as Applied to the Modern Business." Mr. Armstrong declared that there is much misinformation prevailing on the subject of overhead, a typical example of which is the attitude of some contractors who believe they can apply one percentage of overhead to one job and a different percentage of overhead to the next job.

Mr. Armstrong reported results of a survey made by the Columbus Association. This survey indicated that overhead is based upon productive hours or on productive labor or on combined cost of labor and



DAYTON, OHIO

Reading left to right: Charles D. Monte, Ray E. Barrett.

material. The method of applying overhead is not restricted to any one class, but is found in all classes of shops.

Mr. Armstrong said that under present conditions the Columbus Association is recommending that overhead be applied on both labor and material. He declared that this recommendation is made in view of the fact that other methods tend to penalize either large or small jobs or the jobs where there are unbalanced proportions of labor and material.

The survey made by the Columbus Association brought out the interesting fact that overhead on labor and material varies from 25 to 345 percent according to the shops reporting. However, the greatest number of shops showed an overhead cost of just about 40 percent on labor and material for the roofing and sheet metal industry and 50 percent for the furnace man.

Profits Under NRA

Mr. Armstrong declared that some contractors are laboring under the illusion that NRA is going to help us make a profit. He declared that this is not the intention of NRA and that correspondence with other industries indicates that rather than trying to help an industry make a profit the NRA seemingly is trying to drive profit down. The speaker cited the case of the lumber yards where a mark-up of 50 percent was used in the beginning and has been hammered down to 37 percent by NRA. The speaker declared he believed in setting a high percentage of overhead in order that if reductions are ordered the industry can make them and still show a profit.

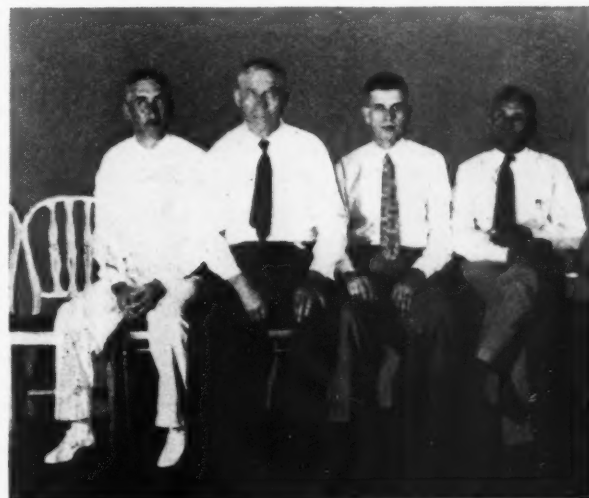
Considerable discussion from the floor occurred Thursday morning relative to the decision of NRA that no roofing contractor may give the buyer a guarantee exceeding two years' time. It seemed to be the opinion of various members on the floor that the manufacturers of roofing materials may independently give the owner a guarantee or bond,

(Continued on page 60)



SPRINGFIELD, OHIO

Reading left to right: T. J. Hamilton, Charles F. Hauck, C. H. Lawrence, David Hamilton.



TOLEDO, OHIO

Reading left to right: J. T. Hocke, Fred Christen, Carl Schmidlin, Joseph Dersher.



CLEVELAND, OHIO

Reading left to right: Wm. E. Feiten, D. A. Mannen, Mike Cutter.

OFFICERS LADIES AUXILIARY

Reading left to right: Seated—Mesdames J. Cantor, W. H. Lauer, A. R. Snyder, H. Haslett, K. Blackwood. Standing—A. E. Bogen, W. H. Dailey, J. Endres, E. R. Armstrong, S. Allen.



ASSOCIATION

Activities

Dayton, Ohio

The Dayton code area has elected a committee and has set up a tentative program which seems likely to meet with approval. This committee consists of eleven men.

One of the most interesting features of our program, we believe, is the method set up to handle bids. The Builders Exchange of Dayton has made the following suggestion to the building trades of this city, relative to the proper and efficient method of regulating the bidding practices under NRA Codes:

Each member of the industry who is required to post a duplicate bid under the competitive bid requirement may use the facilities of the Builders Exchange for that purpose, for which service he is to pay into the Builders Exchange fifty cents per month. That half dollar permits a contractor to post as many duplicate bids as he may have. The present membership fee into the Builders Exchange is \$36.00 annually, members of which are not required to pay any additional fee for using the bid depository, which is already set up and operating.

The plan is this: For \$1.50 per month (or an additional \$1.00 for non-members), totaling \$18.00 per year, a contractor may enjoy the full benefits of the Exchange, including free bid depository service. Our administrative committee can see no arguments against this policy, neither can our local association. And, although this plan is not yet in operation, we can see no reason why it will not be accepted and approved by all concerned.

Up to the present time the local administrative committee has come to no decision as to the boundaries of our trade area. Thus far greater Dayton and the suburbs immediately adjoining are being considered as the logical area. However, the Code Authority at Cincinnati, sixty miles to the south of Dayton, has asked for a meeting with our committee to determine the logical boundary line between the Dayton and the Cincinnati areas.

Our association has been centering its full activity around a proposed City License Law for warm air heating contractors, having just placed the necessary ordinance in the hands of the City Commission last week. If passed, this ordinance requiring the licensing of all contractors who install, repair, alter, clean or add to any warm air heating systems in the City of Dayton, will be the greatest forward step ever taken by any previous trade association in this part of the state. Some of us are inclined to believe that it will mean more in the future to the warm air heating contractors of Dayton than the Code.

Any organizations throughout the country who are interested in obtaining a licensing law for the heating contractors in their locality are welcome to any information concerning

the procedure adopted here and the drafts used in obtaining the required results. Merely address queries to this Association in care of the Secretary, 340 Huron Ave., Dayton, O.

R. E. Barrett, Secretary.

Reading, Pa.

Our organization here in Reading is composed of about 20 per cent of the sheet metal and roofing contractors in the city and covers all the leading firms.

We are sorry to say that so far we have not made much headway, nor have we attempted to organize our county for code compliance. Neither have we set a wage scale as yet, inasmuch as our men are not organized.

We are working for improvements and meet regularly once every month, but it has proved rather difficult to get regular attendance.

However, we are keeping right at it and hope to gradually get the trade as interested as we should like to have them.

Charles F. Luppold, Secretary.

Philadelphia

Fred U. Ritter has been appointed secretary-treasurer of the Philadelphia Local Code Authority Committee. His address is Room 708, 1600 Arch Street, Philadelphia, where he has a suite of offices equipped to carry on the code work which is well started.

Under the organization as set up at present, bills have been sent out for an advance payment of \$5.00 and about \$1000 has been collected.

The organization is holding meetings practically every evening and the meetings are so arranged that about 25 shops are invited to each gathering. Since July 9, about 150 shops have been brought into these code and cost figure meetings. The association is asking \$15.00 dues from all contractors doing up to \$10,000 gross business; \$30.00 up to \$50,000 gross; \$50.00 up to \$75,000 gross and \$100.00 for all shops doing more than \$75,000 gross business. This scale is subject to change and perhaps some alterations will be made in the future.

The Philadelphia Association has set up its code area to include all towns within a 30-mile radius of the city hall. Where the line intersects a county the whole county is to be included in the area. It is our intent that the Philadelphia Code Authority Committee will, in a general way, carry out the provisions of the code for the entire area except the collection of assessments which will be done by local code committees in the various areas.

Each area of population where a local association already exists outside of Philadelphia County, is expected to elect its own local code committee and to appoint one member from this committee to be a member of the area code authority.

Fred U. Ritter,
Secretary.

Fox River Valley, Ill.

The First Annual Field Day of the Fox Valley Furnace and Sheet Metal Contractors Association was held at Bartlett Hills Country Club, Wednesday, July 11th.

Those participating in the festivities included forty members and thirty-five guests. Mayor Lehman of Elgin, who owns and operates a furnace and sheet metal shop in that city, was present and gave a short talk. Others who attended and made short talks were: Harvey Manny of the Robinson Furnace Company of Chicago and Walter Joy, president of Republic Metals, Chicago.

Golf, horseshoes and cards were enjoyed during the afternoon. Winners in golf were: Low gross, guests, Dr. Fuqua, Elgin, (83); lowest number of putts, guests, J. A. LaVine, Elgin, (31); low gross, members, J. W. McAllister, Elgin, (101); lowest number of putts, members, Fred Nolting, Elgin, (34).

After spirited competition, the blind bogey cup, sponsored by Jack Stowell, president of the Association, was won by Mr. Skinner of Ryerson Steel Company, Chicago. The winner at horseshoes was Walter Joy. A prize for the somewhat doubtful distinction of being the worst horse-shoe pitcher present went to Ted Landgraf, a guest from Aurora.

Following the afternoon festivities, there was a dinner, a short business session and followed by entertainment by William Wohlschlagel and John Mesroves of the Aurora YMCA weight lifting team, who gave a very spectacular strong man exhibition.

The next meeting of the Association will be held in West Chicago on Monday, August 6. Vice-President Fred Goetz will be in charge of arrangements.

Elmer J. Borman, Secretary.

Wisconsin

The Board of Directors of the Wisconsin Sheet Metal Contractors Association has been engaged in the task of compiling a report on overhead cost figures for all types of shops in Wisconsin.

This report is about ready for publication and many interesting facts have been unearthed relating to costs as found in small, medium and large shops.

Work of organizing the state of Wisconsin for code compliance is going ahead and it is expected that a complete organization will be announced shortly.

The board of directors has held a number of meetings around the state and has combined business and pleasure at these gatherings. The board makes it a point to hold the meetings in each board member's city.

Paul L. Biersach,
Secretary.

Heating and Air Conditioning At 1934 Century of Progress

There are numerous exhibits of heating and air conditioning equipment at the 1934 Century of Progress. These exhibits are instructive, well planned and have proved a consistent attraction. Here are some of the displays.



Above—The exhibit of General Electric Company, Schenectady, N. Y., air conditioning central units, oil boilers, gas boilers, unit coolers, compressors, attic ventilating fans are shown. Lectures are given several times a day. (Electrical Building.)



Above—The Bettendorf, Davenport, Iowa, oil burner display features modernistic burners. A live display shows a burner in operation. The furnace at the right is a Weir by Meyer Furnace Company, Peoria, Ill. (Home Planning Hall.)



Above—Hess Warming and Ventilating Co., Chicago, shows their welded steel furnace and unit conditioner. All models have windows for inspection. This is the Hess company's second year. (Home Planning Hall.)



Above—Exhibit of Gar Wood Industries, Detroit. Both furnace and boiler units are shown hooked to air conditioning units. (General Exhibits Building.)

Below—Exhibit of the Iron Fireman Company, Portland, Oregon. Both industrial and domestic stokers are shown in typical settings. Real fire is maintained in several units. (Home Planning Hall.)



In addition to these exhibits several others of interest will be shown in a later issue.

Chromium Plated Metals Furnish Major Decoration on Ford Building—Century of Progress

Right—Detail of main entrance showing decorative columns and canopy covered with chromium plated copper. Below—view of enormous balcony and the chromium plated copper sheathing.



SHEET metal contractors who are looking for tangible proof that electro-metallurgists have perfected a permanent finish on sheet metal should visit The Ford Exposition Building at the Chicago World's Fair this summer.

On this immense building, almost three city blocks long, chromium plated metal has been used by Albert Kahn, the architect, as the dominant note in decoration. It is found on the 500 foot balcony, on the columns and canopy of the front en-

trance and on the thirty-two columns each 45 feet high in the central court.

Altogether, there are more than 20,000 square feet of chromium plated metal besides 4200 square feet of bright finish chromium plated zinc used on the light reflectors. The balcony, fronting Lief Ericksen Drive, uses chromium plated copper for facia and soffit panels. The east entrance is completely covered with beautiful satin chromium. The canopy under which all

pass who enter the building is one unbroken chromium surface. In the court each of the thirty-two towering columns are faced with the same material. In the historical exhibit chromium plated copper reaches completely around the walls near the ceiling. It is also present on the facia and soffit panels on the interior of the balcony.

Up to the present, chromium plate has been known chiefly in households as a hard, protective covering impervious to discoloration. Its long life and beauty in kitchen utensils is well established. But it remained for Albert Kahn, and through him, Henry Ford, to be first to recognize the practicability and artistic value of using chromium plated metal as a major detail of architectural decoration.

The chromium which adorns the Ford Building differs from the bright, highly reflective chromium seen on Ford V-8 radiators and flatware. It is finished in a soft, satin sheen, easy to look at in the sunlight, but just as resistant to tarnish as a bright finish.

Contractors interested in fabricating details will be interested to know that these sheets are quite

(Continued on page 62)



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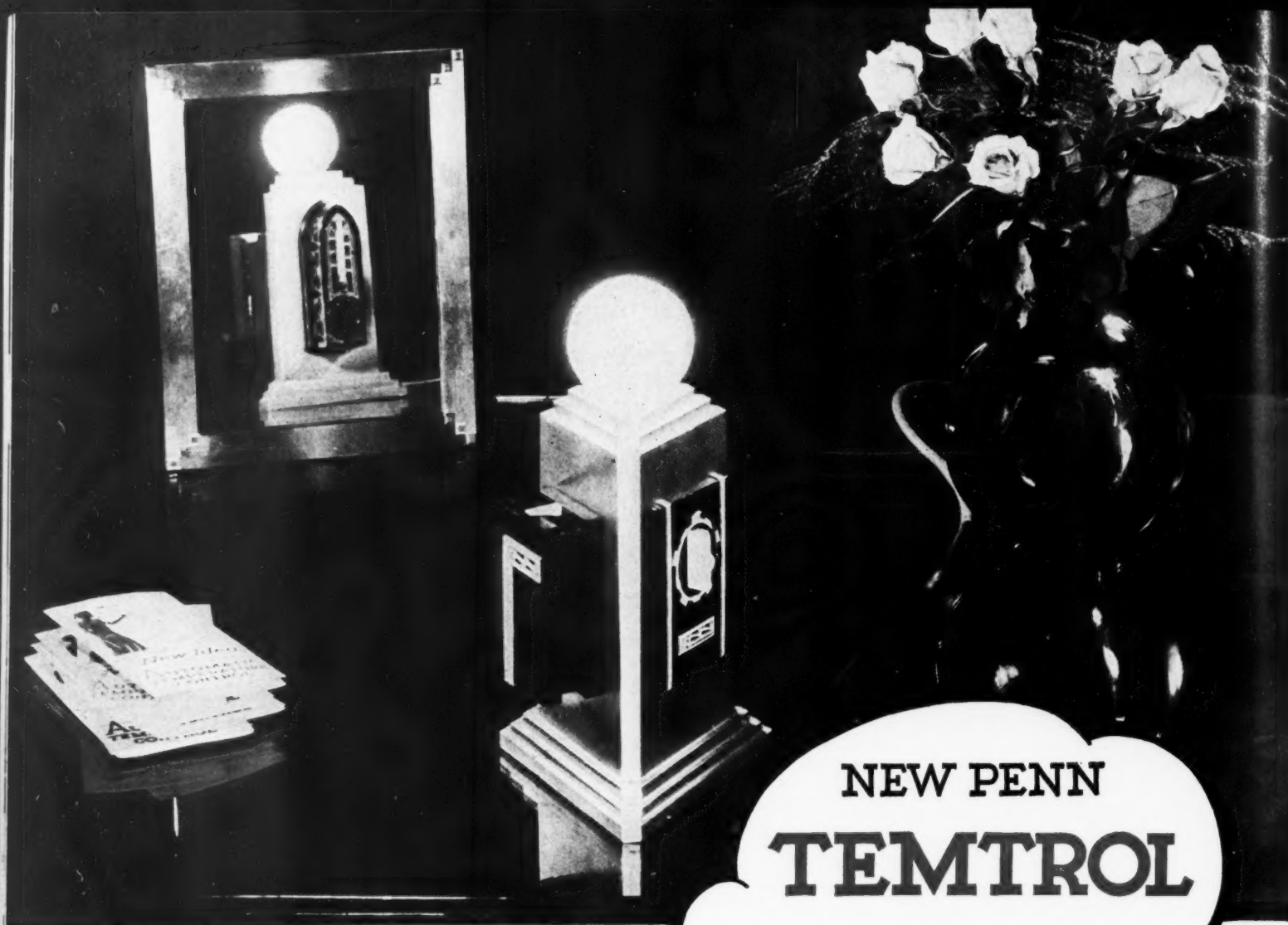
Air Conditioning Section

**Devoted to the technical and merchandising problems
of air conditioning in homes and small buildings**

FOR several issues we have been publishing information on attic ventilation as a means of summer cooling. The idea seems to have caught on if correspondence and contact with readers is any guide. That the idea is sound is amply proved by the excellent results obtained with an attic ventilation system in the Research Residence at Urbana.

- - - This summer has been a most excellent proving period. High temperatures have prevailed throughout the country. Hundreds of thousands of home owners have had brought home to them the fact that if their house could be cooled as rapidly as outside temperatures drop after sundown they could get a good night's sleep.

- - - Reducing inside temperatures along with the drop in outside temperature is exactly what this system does. It ought to be a very easy idea to sell the public for the public can get a working demonstration any night in hot weather.



NEW PENN TEMOTROL

Display and Demonstrator

Paves the way to GREATER SALES and PROFITS

THE new Penn Temtrol is the last word in automatic room temperature regulation. It is so utterly different, it makes obsolete all conventional thermostats. A fact that's easy to prove to your customers with this dynamic display and demonstrator set!

In your salesroom, you can arrange an attention-compelling display that will pave the way to sales and profits. As a part of every salesman's kit, it will prove to be the strongest appeal for automatic heat. In the home, it demonstrates Temtrol performance during the interview, or it may be easily and quickly hooked up for a trial operating period of the existing heat plant, with either plain or Day-Nite Temtrol regulation.

ADAPTABLE TO ALL AUTOMATIC HEATING SYSTEMS

It is adaptable to all automatic heating systems and will prove to even the most skeptical that Penn Temtrol is not just

another thermostat, but an entirely new conception of automatic heat control. How it brings so many outstanding new standards of comfort, health protection, convenience, and economy, it will pay to scrap all present thermostats.

Every automatic heat dealer will want this attractive Display Set and Demonstrator to cash in on the Penn dramatic nationwide Temtrol advertising drive. An extensive campaign built to make sales not only for new automatic heating equipment but for Temtrols to replace existing conventional thermostats—now obsolete.

SPECIAL OFFER

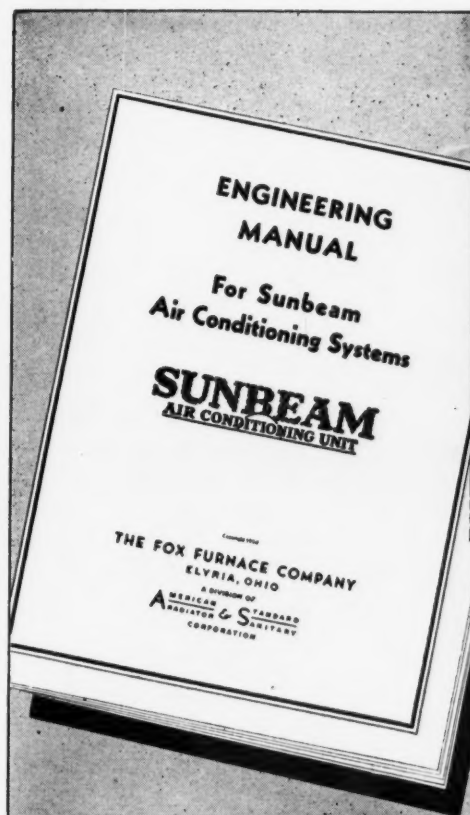
If you act at once, you can secure your Penn Temtrol Display and Demonstrator at a special introductory offer . . . actually less than the price of the controls themselves. This offer is limited. Write at once for a complete description of the new Penn Temtrol System of Temperature Regulation, the Temtrol Display and Demonstrator, and full details of the Temtrol national advertising campaign. You'll be dollars ahead if you do!

★ Equipped with a Penn Gothic Day-Nite Temtrol, Penn Modern Temtrol (the only temperature regulator designed especially for low mounting to maintain True Comfort in the Four Foot Zone) and Penn Timetrol. The Gothic Temtrol and Timetrol are hooked up to demonstrate Day-Nite Regulation. Bulb at top flashes on and off to represent burner operation.

TEMOTROL Supersedes the Thermostat
Only one instrument needed

PENN ELECTRIC SWITCH CO.
DES MOINES, IOWA

BRANCHES: New York, Boston, Detroit, Chicago.
REPRESENTATIVES: Minneapolis, San Francisco, Los Angeles, Seattle, Kansas City.
DISTRIBUTORS in most principal cities. EXPORT OFFICE: 15 Lighthouse Street, New York City.



More Furnace Dealers sell Sunbeam Furnaces and Air Conditioning Units than any other kind

Information Contained In This Manual

How to Estimate Heating Requirements
Requirements When Heating Garage—Outside Air
Tables for Converting C. F. M. Into Required Duct, Riser and Register Sizes
Factors for 32 Different Types of Constructions
Five Different Factors for Temperature Differences Ranging from 10° above to 30° below Zero.
Trunk Line Design
Individual Pipe Systems
Bathroom Vents
Dampers in Pipes and Ducts
How to Avoid High Resistance in Ducts
A Sample Air Conditioning Layout
Data Sheet for Sample Layout
When and How to Insulate Ducts
Installation Specifications

SUNBEAM

Removes the mystery from AIR CONDITIONING



IN the new 16-page Engineering Manual illustrated above, Sunbeam has removed the mystery from the calculating and laying out of residential air conditioning systems. Any intelligent heating contractor can learn how to design systems from this book in approximately one-half an hour.

The factors which are used are based on the latest recommendations of the Guide of the Society of Heating and Ventilating Engineers. So this manual is exact! And absolutely accurate! It is not satisfied with *approximate* results. Sunbeam engineers, who have designed thousands of heating and air conditioning systems, have developed this Manual so that a single multiplication of the amount of exposed surface is all that is needed. This simplification saves time! Reduces the chances for errors in your calculations!

A copy of this manual—a complimentary contribution by the world's largest makers of heating equipment to the advancement and education of the heating trade—will be furnished free of charge to any furnace dealer who requests it on his business letterhead. Unfortunately it cannot be distributed indiscriminately and free of charge to the thousands of individuals who will rush to obtain a copy. If you are entitled to a copy of this modern Engineering Manual, you can conveniently request it by attaching the coupon below to your business letterhead.

THE FOX FURNACE COMPANY, Elyria, Ohio
A Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

ATTACH THIS COUPON TO YOUR BUSINESS LETTERHEAD

Please send us a copy of the new 16 page Air Conditioning Engineering Manual. Also the name of the Sunbeam Jobber who serves the territory in which we are located.

Name
Address
City and State A-8

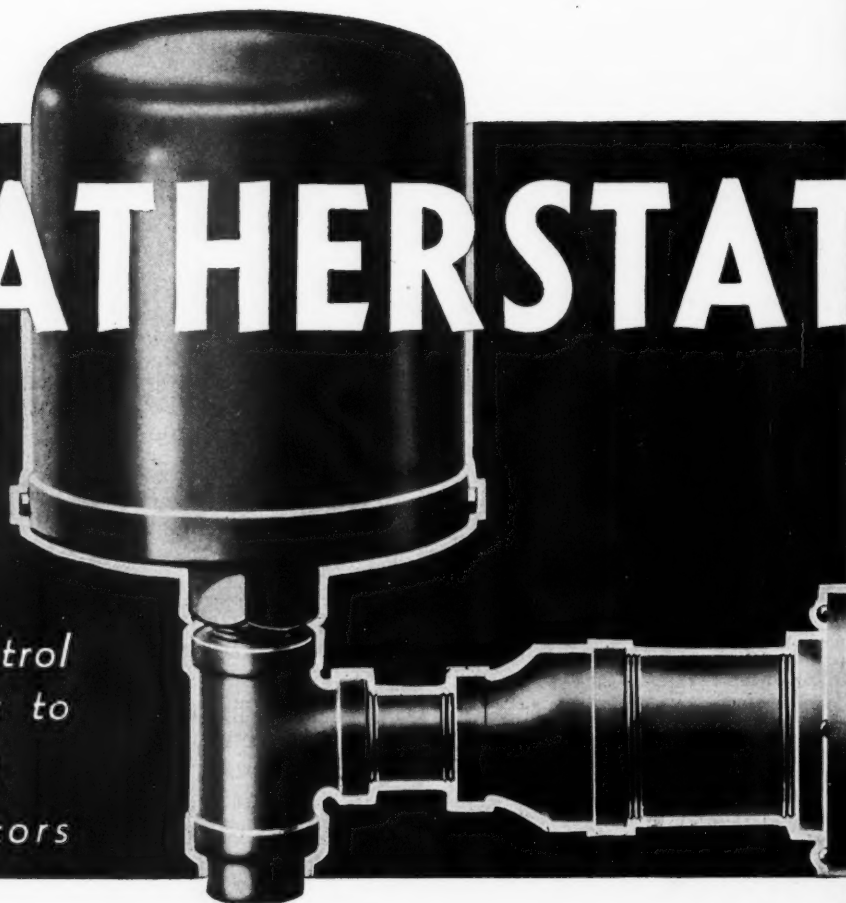
See the Sunbeam Exhibit at the Century of Progress



**MINNEAPOLIS-HONEYWELL
 PRESENTS THE**

WEATHERSTAT

*An outside control
 which responds to
 ALL FOUR
 Weather Factors*



THE NEW Minneapolis-Honeywell Weatherstat is an outside control which governs heat supply in response to the effect of all 4 weather factors—wind direction, wind velocity, solar radiation and outside temperature. It is a new feature of the Modutrol System and provides greatest economy and equalized heat distribution . . . Four years of extensive field tests have proved the merit of the Weatherstat. All 4 weather factors influence inside temperatures, and the Weather-

stat, being an outside control, precisely balances heat input against heat losses and thus eliminates overheating and underheating which normally cause tenant discomfort and fuel waste . . . An investment in a Modutrol Weatherstat System is self liquidating—often in a very short time. The Minneapolis-Honeywell Engineer in or near your city can supply you with complete details . . . Minneapolis-Honeywell Regulator Company, 2726 Fourth Ave. South, Minneapolis, Minn.

MINNEAPOLIS-HONEYWELL

Control Systems

"Summer Is The Time To Push Oil Burner Sales" Says Johnston

By

R. C. Nason



"WARM air and sheet metal contractors who would be successful oil burner dealers should push their product hardest in the summer months," says John J. Johnston, president of the sheet metal-heating firm bearing his name, located at Richmond Hill, L. I., for the last 30 years. "When homeowners have their bins full of coal and coke, naturally, they feel that they must use what they have on hand. This interferes with oil burner sales. Late spring and summer are good selling months because bins have been exhausted and people are willing to listen to improvements."

"Based on 15 years experience, I would hazard the opinion that heating dealers who doze in the summer will sell few burners in fall and winter.

The warm months are the best prospect-finding months. The John J. Johnston, Inc., organization works harder on oil burners in summer than it does in winter. The latter is the reaping period. According as dealers have sown, so will they reap."

Getting leads continues to be one of the obstacles to successful selling, believes Mr. Johnston. But there are many plans that can be carried out with beneficial results. Many of this contractor's tips come from advertising in newspapers, from direct mail form letters, from house-to-house canvassing and in other ways. The drudgery work occupies the time from May to October.

To win good results in canvassing, he asserts, one must have something exceptional to offer. Johnston feels he has this "something" in a special

(Continued on page 36)

JOHN J. JOHNSTON, Inc.
HEATING ENGINEERS [REDACTED] ROOFING CONTRACTORS
111-08 JAMAICA AVENUE
RICHMOND HILL, N. Y.

May 25, 1933

Mrs. Ellen Fielding,
181 Sutphin Place,
Jamaica, L. I.

Dear Madam:

Getting rid of ashes and litter in your basement is only one of the benefits you will receive when you have a Quiet May Oil Burner installed in your home. The basement immediately becomes a play room, library, game room or whatever you wish. Doing away with the mess typical of coal heating is just like adding another room to your home. You'd like that, wouldn't you?

But oil heating brings to you, also, many more benefits. Your home will be uniformly and reliably warm all winter long without so much as having to visit the cellar. Your automatic thermostat provides plenty of heat when cold days come, eliminates fuel expense when heat is unneeded. You positively will be freed from worry and annoyance.

If you are interested in learning more about the advantages brought to you by a Quiet May burner, we feel sure you will be interested in the facts our representative will present to you when he calls on you.

Yours for better heating,
John J. Johnston, Inc.
By
President

This is a typical Johnston letter mailed early in the summer to the prospects in his territory. Note the appeal of a clean, livable, basement, elimination of drudgery and attention.

JOHN J. JOHNSTON, Inc.
HEATING ENGINEERS [REDACTED] ROOFING CONTRACTORS
111-08 JAMAICA AVENUE
RICHMOND HILL, N. Y.

June 2, 1933

Mrs. James F. Thorpe,
2511 Manette Avenue,
Richmond Hill, L. I.

Dear Madam:

The time to investigate automatic heat is when you don't need it. That sounds odd, doesn't it? And yet when you stop to consider, it's really a very simple truth.

For instance, you may be one those thrifty, thoughtful people who put in a supply of coal in the summer. But wouldn't you like to eliminate the unsightly, dirty coal bin forever? Wouldn't you like to buy your fuel as you need it, turn on your heat switch and give no further thought to your winter comfort problem?

In a few days a representative of this office will call on you to explain our automatic heating plan. There is not the slightest obligation on your part, we ask only a few minutes to outline some of the advantages of heating with oil.

Yours for better home comfort,
John J. Johnston, Inc.
By

Another Johnston letter stressing the advantage of buying in summer just as the prospect buys the winter coal. Johnston says he tries to sell the burner before the prospect buys his coal.

This series of articles is intended to give the contractor all information needed to sell air conditioning to owners of houses heated by steam, vapor, or hot water. We assume that the boiler is already in place, but we must buy and install heat transfer sections, blower, filters, controls, duct work and registers. The problems of design are somewhat different, we do not have the flexibility of the furnace, our temperature range is limited and so on. This article defines common terms and formulas and presents the house we will condition.

Air Conditioning for Radiator Heated Houses

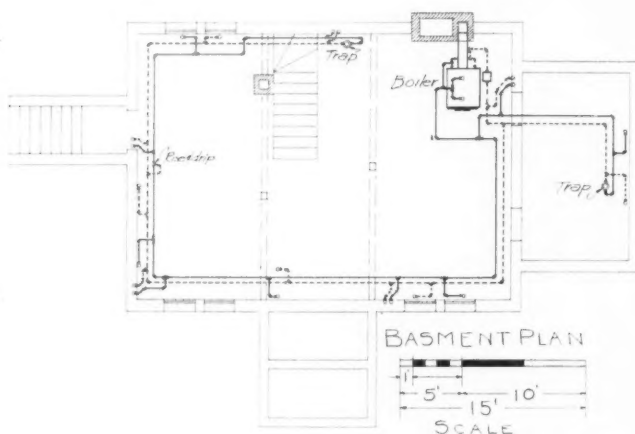
By Platte Overton

IN the first article of this series (July issue) it was explained that the contractor wanting to do air conditioning work in houses already heated by radiation must accept the fact that the problems encountered are somewhat different from those of furnace heating.

The first article also pointed out the basic differences between steam, vapor and hot water plants, giving readily distinguishable features which enable the contractor to recognize the system. With this basic information and a realization that we must learn and know if we are to do this kind of work, we are now ready to look into the problems of design.

To make the discussion as easy to follow as possible we will take a typical residence (heated now with

halls, vestibule, and bath. The owner wants conditioned air and in addition tells us that room 104 (the dining room) is extremely hard to heat in cold weather. The owner also wants all radiators removed from rooms 101, 102, 104 and wants complete air conditioning in these rooms. He plans to buy cooling so we must make provision for cooling in our design. When the owner installs cooling he tells us he wants the system so ar-



a vapor system) and design an air conditioning system for this house using as much of the present equipment as possible, but selling and installing the fans, motors, sheet metal work, heat transfer coil, registers, etc. The only work we won't do is connect the heat transfer coil to the boiler. That job we will SUB-CONTRACT.

The typical house we will air condition is shown in Figs. 5, 6 and 7. This is a seven-room house with

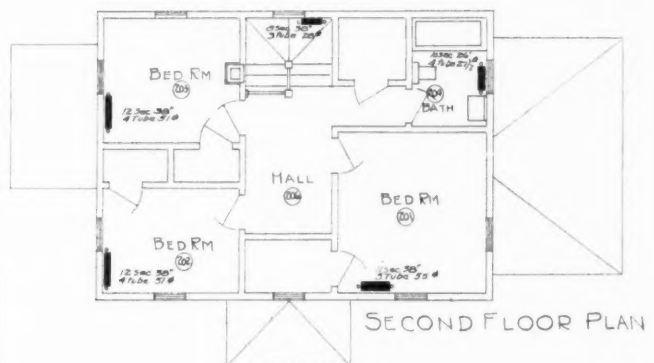


Fig. 5—At the left, plan of the basement showing boiler in place and pipe runs through the basement.

Fig. 6—Above, the second floor plan showing location and size of existing radiators, arrangement of rooms, etc.

ranged that he can throw the entire cooling capacity into two bedrooms upstairs.

With these specifications in mind and a survey of the present system before us we are ready to begin our design. We will use our customary data sheet so as to be sure all requirements are accounted for.

Do we proceed just as we do in laying out a furnace system? Yes and no. The basic calculations for heat loss, air change, duct sizes, equipment capacities, register air temperatures, etc., are the same, but because we are getting our heat from a boiler and using water or steam vapor to transfer this generated heat

to the coil where the air will pick it up there are some engineering data we probably haven't used before.

Perhaps we should rapidly review old engineering data and discuss the new formulas just as well here as later. So—

C.f.m. = Cubic feet of air per minute.

Standard Air = Air weighing .07488 lbs. per cubic foot. This weight corresponds to air having a barometric pressure of 29.92 inches of mercury, a dry-bulb temperature of 68° F. and a relative humidity of 50%. There is approximately 13½ cubic feet of standard air to a pound. Weights of air at other temperatures are given in Fig. 8.

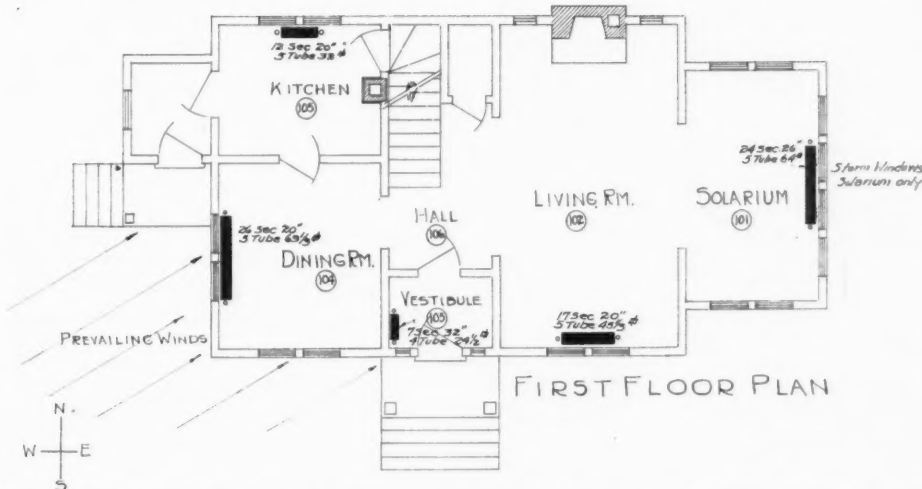


Fig. 6—First floor plan showing rooms owner wants conditioned, location and size of radiators, hard-to-heat rooms, prevailing winds and exposures.

B.t.u. — British Thermal Unit and is the unit quantity of heat required to raise the temperature of 1 pound of water one degree or from 62° to 63° degrees F. and is the standard unit in all heating calculations.

Specific Heat = The specific heat of a body is the ratio between the quantity of heat required to warm that material one degree. and the quantity of heat required to warm an equal weight of water one degree. The specific heat of standard air is given as 0.24.

To find the number of B.t.u.'s required to raise the temperature of air, multiply the weight of the air in pounds by the specific heat and by the number of degrees rise.

Example: How many B.t.u.'s will be required per hour to raise the temperature of 2000 c.f.m. of standard air weighing .07488 pounds per cubic foot from 60 degrees to 110° or 50 degrees rise.

Answer: 2,000 c.f.m. equals $2,000 \times 60 = 120,000$ cubic foot per hour. $120,000 \times .07488 \times .24 \times 50 = 107,827$ B.t.u.'s.

One B.t.u. will raise the temperature of 55.2 cubic feet of air from 62 to 63 degrees, or one B.t.u. will raise the temperature of one cubic foot of air 55.2 degrees.

1

$$\text{Formula} = \frac{1}{\text{specific heat} \times \text{weight per cu ft.}} = 55.2 \text{ approx.}$$

$$(.24) \quad .07488$$

approx.

There is another formula that is often used by heating men, but it is subject to error due to the fact that it does not take into consideration the fact that the weight of air will vary at different temperatures. It is

$$\text{c.f.m.} \times 60 \times \text{temp. rise}$$

55.2

This formula is simply given to inform the reader that such a rule exists and to beware of its errors for high or low air temperatures.

Latent Heat is the number of B.t.u.'s required to change the water at the boiling point into steam at the same temperature. It is called the latent heat of vaporization, or just latent heat. The latent heat expressed in B.t.u. per pound will vary for different steam pressures and can be obtained from standard charts. To explain, at 5 pounds pressure, 227 de-

(Continued on page 38)

PROPERTIES OF SATURATED AIR
Weights of Air, Vapor of Water, and Saturated Mixture of Air and Vapor at Different Temperatures and at 29.921 Inches of Mercury

Temperature Degrees Fahr.	Weight of the Dry Air Pounds	Weight of the Vapor Pounds	Total Weight of Mixture Pounds	B. t. u. Absorbed by One Cubic Foot Sat. Air per Degree F.	Cubic Feet Sat. Air Warmed One Degree per B. t. u.	Specific Heat B. t. u. per pound of Mixture
0	.08625	.000068	.08632	.02083	48.02	.2413
5	.08528	.000087	.08537	.02060	49.54	.2414
10	.08433	.000110	.08444	.02039	51.05	.2415
15	.08339	.000139	.08353	.02018	49.56	.2416
20	.08246	.000176	.08264	.01998	50.07	.2418
25	.08154	.000222	.08176	.01978	50.57	.2419
30	.08062	.000277	.08090	.01958	51.07	.2420
35	.07970	.000339	.08004	.01939	51.58	.2423
40	.07878	.000409	.07919	.01921	52.06	.2426
45	.07786	.000491	.07835	.01903	52.55	.2429
50	.07694	.000587	.07753	.01885	53.05	.2431
55	.07601	.000699	.07671	.01868	53.54	.2435
60	.07506	.000828	.07589	.01851	54.02	.2439
65	.07409	.000978	.07507	.01835	54.50	.2444
70	.07310	.001151	.07425	.01819	54.97	.2450
75	.07208	.001350	.07343	.01804	55.44	.2457
80	.07103	.001578	.07261	.01790	55.87	.2465
85	.06993	.001838	.07177	.01775	56.34	.2473
90	.06879	.002134	.07092	.01762	56.76	.2485
95	.06760	.002470	.07007	.01749	57.18	.2496
100	.06635	.002850	.06920	.01736	57.59	.2509
105	.06503	.003279	.06831	.01725	57.98	.2525
110	.06364	.003762	.06740	.01714	58.35	.2543
115	.06217	.004305	.06648	.01704	58.69	.2563
120	.06060	.004914	.06551	.01695	59.00	.2587
125	.05893	.005594	.06452	.01686	59.31	.2613
130	.05715	.006351	.06350	.01679	59.56	.2644
135	.05524	.007191	.06243	.01673	59.78	.2680
140	.05319	.008120	.06131	.01668	59.96	.2721
145	.05099	.009153	.06014	.01664	60.11	.2767
150	.04864	.010295	.05894	.01662	60.27	.2820
155	.04612	.011553	.05767	.01661	60.21	.2880
160	.04340	.012936	.05634	.01662	60.17	.2950
165	.04048	.014451	.05493	.01663	60.14	.3028
170	.03734	.016108	.05345	.01668	59.96	.3121
175	.03397	.017919	.05189	.01675	59.71	.3228
180	.03035	.019896	.05025	.01684	59.38	.3351
185	.02646	.022053	.04851	.01695	59.00	.3495
190	.02228	.024400	.04668	.01710	58.49	.3663
195	.01780	.026950	.04475	.01730	57.81	.3866
200	.01300	.029715	.04272	.01749	57.18	.4094
205	.00783	.032707	.04054	.01767	56.50	.4359
210	.00230	.035938	.03824	.01802	55.50	.4712
212	.00000	.037307	.03731	.01815	55.10	.4865

Fig. 8—Standard table of properties of saturated air showing weights of air, vapor, mixture, etc., for different temperatures.

Automatic Controls

VARIATION number two (to be discussed in this article) of a basic automatic control system wherein the fan runs constantly and the room thermostat or some other instrument controls the heat supply through the damper and check, differs radically from any control system presented so far in this series.

The chief difference is that the temperature of the air entering the room or rooms IS VARIED according to the needs of that room or rooms.

In all other systems discussed to date, the register air temperature was a direct reflection of the condition of the fire. When the fire accelerated the register air temperature rose. When the fire died the register air temperature dropped.

But in this system the needs of the house are met by mechanically changing the temperature of the air issuing from the registers. As the weather gets colder and the house needs more heat the register air temperature rises. In mild weather, when heat demand is low, the register air temperature decreases.

The fan meanwhile, continues to deliver a constant amount of air to all rooms.

This is not a new system; neither is it an untried system. Its principles have been used in heating and

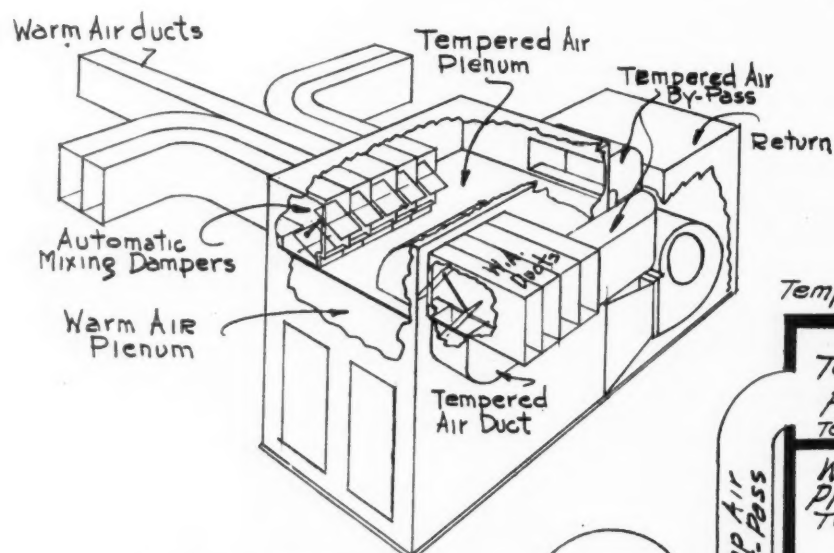
This article discusses a radically different system. In this system we mechanically vary the temperature of the air at the register according to the needs of the room. Every room or zone has its own thermostat. C.f.m. is constant always. It is the type of system which really gives the kind of comfort the owner desires. We suggest you read this article carefully.

ventilating for many years and examples of the system can be found in school houses and large homes all over the country.

Why hasn't this system gained popularity? The answer probably lies in the matter of cost, which will be discussed here. Because this system of control and operation offers the ultimate in comfort, its use has been restricted mainly to those installations where cost is not of primary importance and a few dollars additional for control apparatus is not questioned.

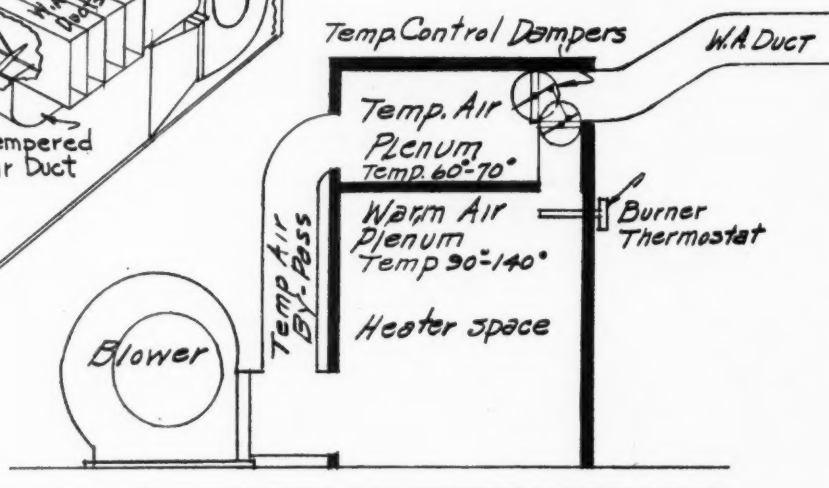
As usually installed a house with such a control system has a thermostat in every room or at least in a zone of rooms where heat loss and heat demand are about equal. Also, because the needs of each room or zone are satisfied through a room or zone thermostat, it is necessary that such a room or zone have an individual duct supply system. The room or zone thermostat

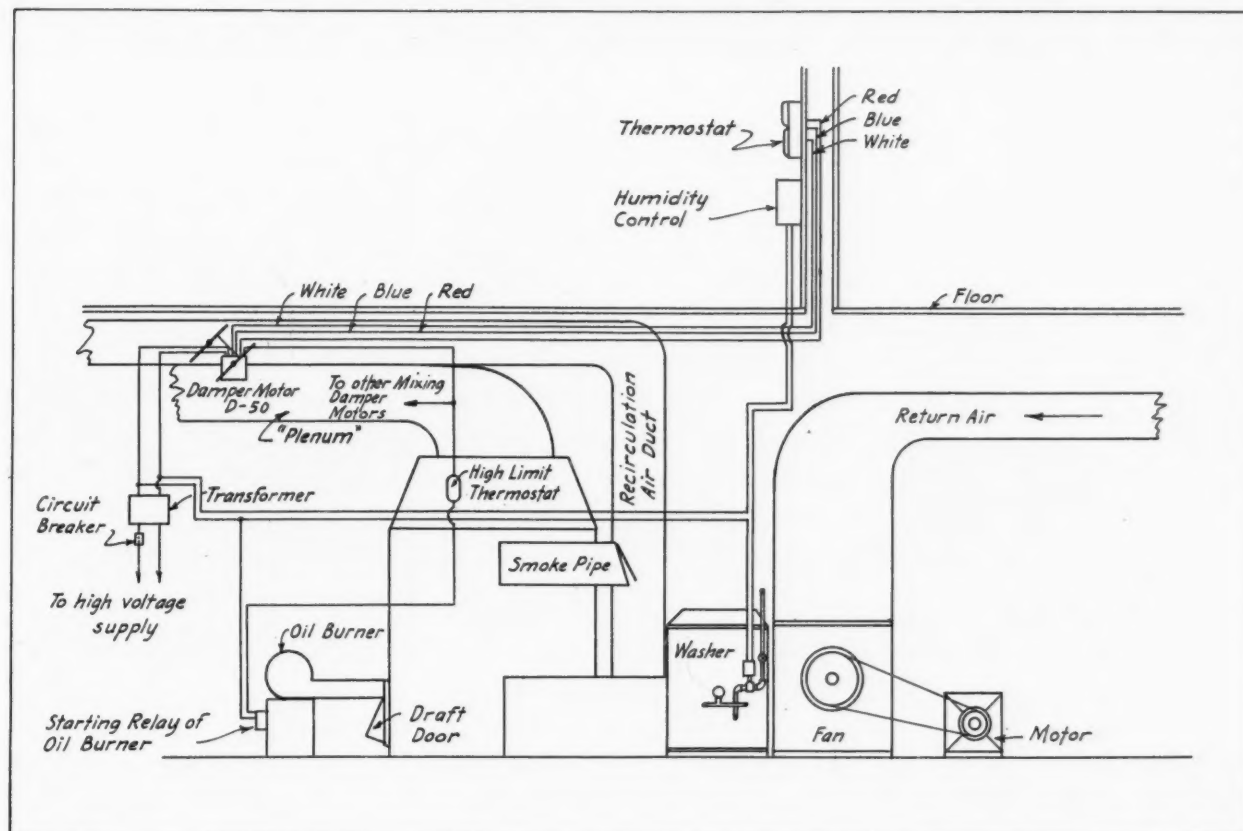
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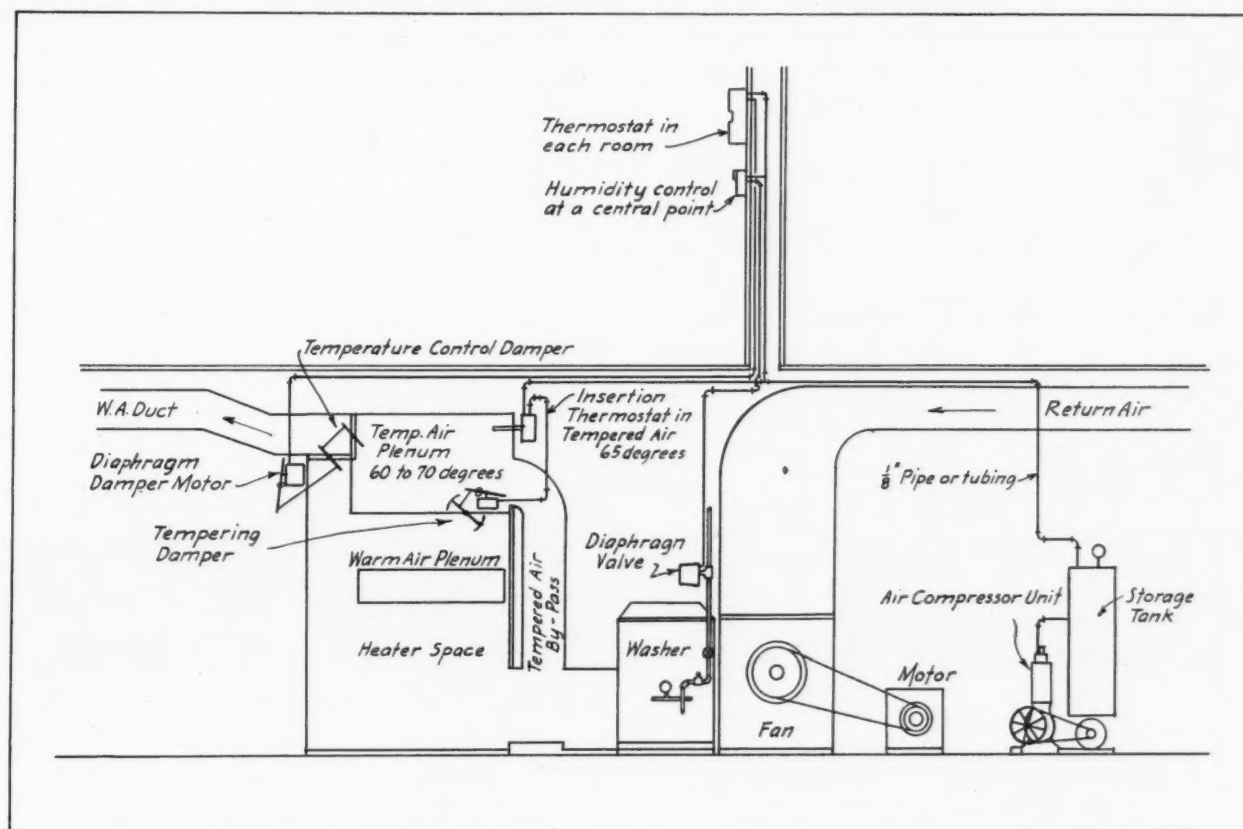
Above—Sketch from our book—“Forced Air Heating” showing the construction of a typical mixing damper system. Note the dampers in each duct. Each damper has its own motor. The fire is controlled by a bonnet temperature switch to maintain a constant level of temperature.

Below—Another sketch from “Forced Air Heating” showing casing construction for mixing damper operation. Note the warm and tempered air plenums and mixing dampers which control the proportions of air from each plenum passing into the ducts.





The sketch shows a typical control hookup using apparatus of the Barber-Coleman Co. This equipment is electrical. The room thermostat controls the mixing damper motor, which, in turn, controls the movement of the damper. A reversing, multi-position motor gives all-directional operation so that the damper can move forward or backward, through large or small arcs, as the thermostat demands.



This diagram shows a control system using pneumatic apparatus of the Johnson Service Co. The damper motor is of the air bellows type. Compressed air for operation is furnished by a small compressor with about a 1/6 hp motor. With this apparatus, the mixing damper can fluctuate gently for long periods, changing the proportions of warm or tempered air very slightly. The fire is controlled by a bonnet instrument placed in the tempered air plenum.

Comfort Cooling With Attic Ventilating Fans [Part 3]

In the tests conducted at Urbana all possible methods of increasing the cooling rate were tried. This article describes results obtained using the attic fan plus the furnace blower as a booster; a test using the furnace blower just before the attic fan was started; two tests with only second floor windows open versus all house windows opened wide; also the effect of ventilating the attic space during the day-time with first and second floors shut off from the attic.

By A. P. Kratz and S. Konzo*

IT is probable that the Research Residence was better adapted to natural ventilation than the average type of residence would be. The attic was equivalent to a full third story and the dormer windows extended nearly the full height of the story. A 2.5 ft. by 6.5 ft. door at the head of the stairs provided ample area for the passage of air into the attic. Hence conditions were particularly favorable for obtaining and utilizing a relatively large chimney effect. In houses with only a small trap door in the second floor ceiling and small attic windows, this chimney effect might be greatly reduced.

All Windows Open Plus Heating Blower

Series 5 was run on the same schedule of window opening as Series 2 but with the basement fan delivering 2142 cubic feet of air per minute taken from outdoors. The results from this arrangement were not quite as favorable as those obtained with Series 2 for which no fan was used. This can not be explained on the basis that favorable wind movement aided the natural ventilation in Series 2. The different points on the curves represented days covering the whole range of wind movement at night and sun effect by day. During most of the season the nights were comparatively calm, and the wind velocity varied from 2 to 7 miles per hour. Except for an occasional storm the days had a high percentage of sunshine. Hence, the most prob-

able explanation appears to be that more air was circulated through the house as a whole by full natural ventilation than by the basement fan. It is also possible that in the latter case some of the air short-circuited out of the windows, although no positive evidence could be obtained on this point owing to the low velocity at the windows.

Basement Air at 5 P. M.

In Series 4 an attempt was made to take advantage of the reservoir of cooler air existing in the basement by recirculating this basement air through the house for about one hour before opening the windows. This series is comparable with Series 5 and the two points representing these tests are shown in Fig. 6. This method of

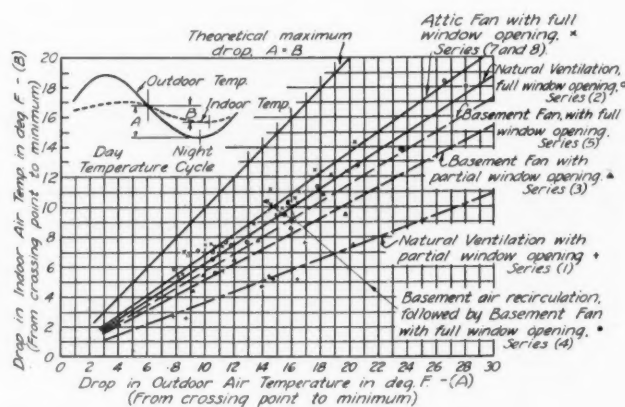
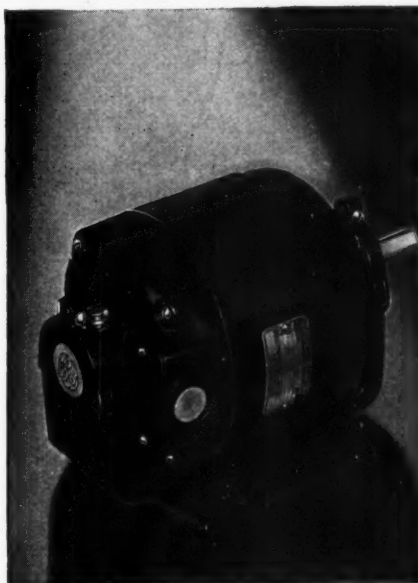


Fig. 6—Curves of temperature drops for various methods of night cooling compared to theoretical maximum drop obtainable

*Study of Summer Cooling in the Research Residence at the University of Illinois, by A. P. Kratz and S. Konzo. A. S. H. V. E. JOURNAL SECTION, Heating, Piping and Air Conditioning, February, 1933, p. 115. Paper presented at the 40th Annual Meeting of the AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS, New York, N. Y., February, 1934.

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operation represented a slight gain over the results from *Series 5*, but the temperature of the basement air soon rose to practically the same as that upstairs and the amount of gain can not be regarded as sufficient to offset the complication in the operating routine. Furthermore, this method of operation appeared to accentuate odors. With all of the different test series, there was a tendency for odors to become slightly noticeable in the afternoon, particularly on the second story, after the windows were closed in the morning, but not to the extent of becoming objectionable.

Attic Exhaust at 16 Air Changes

The most favorable results shown in Fig. 6 were obtained from *Series 7* and *8* in which the attic fan, drawing 3980 cubic feet of air per minute into the first and second stories, was used. No difference was observed between *Series 7* for which the lower sash were raised half way, and *Series 8* for which they were raised all of the way. From Fig. 6 it is apparent that there was

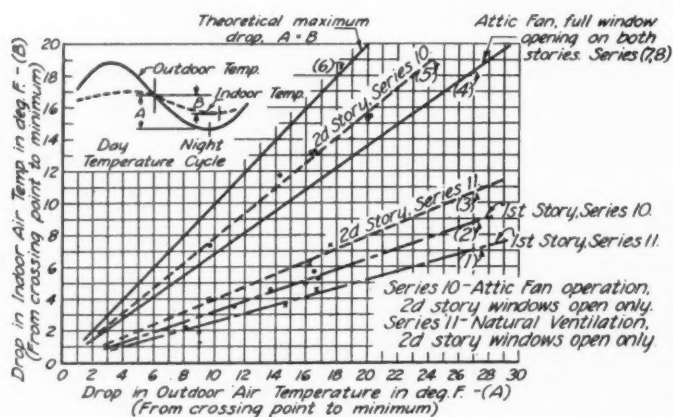


Fig. 7—Curves of temperature drops for night air cooling by means of attic fan. (Research Residence data, summer of 1933)

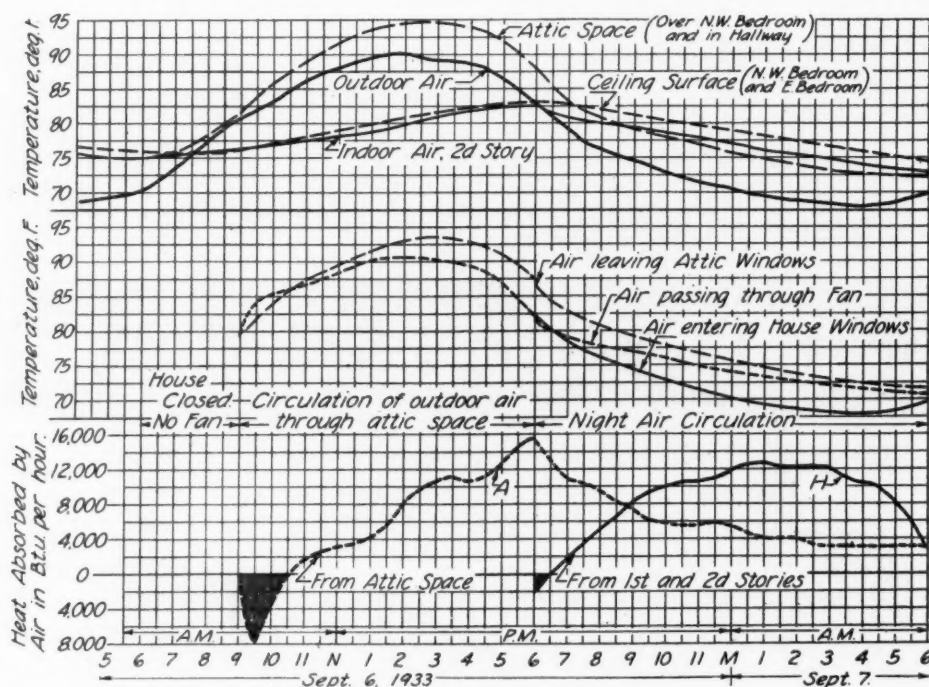
not a great amount of difference between the three most favorable methods of operation, and that even with the 16.8 air changes per hour produced by the attic fan the indoor temperature was not reduced to the same temperature as the outdoor air. The latter condition would be represented by the line designated as the theoretical maximum drop. The results of the tests indicate that considerable benefit may be obtained from the use of an attic fan drawing a generous amount of air into the house through the open windows at night. In a house similar to the Research Residence, having two full stories and an attic having dormer windows and a large attic door, practically as much benefit may be obtained without any fan by opening all of the windows and the door leading into the attic. In case it is not desirable to open a large proportion of the windows at night considerable benefit may be obtained from the use of either a fan in the attic or one installed in connection with a forced air heating system and drawing air from the outdoors. The power required, as shown by Table 1, ranged from 3.85 to 5.40 kw-hr for 12 hours of operation at night.

Second Floor Windows Open

Series 10 and *11* were run with the attic fan and with full natural ventilation respectively, with the windows opened on the second story only. In this case all of the 3980 cubic feet of air per minute was drawn in through the second story windows, giving 33.6 air changes per hour based on the cubic contents of the second story. The resulting temperature drops for the first and second stories are shown in Fig. 7. Comparing curve No. 3 in Fig. 7 with the corresponding curve in Fig. 6, it is evident that the natural ventilation with full window opening was not as effective for the sec-

(Continued on page 43)

Fig. 8—Temperature cycle obtained with attic fan operation (day and night)

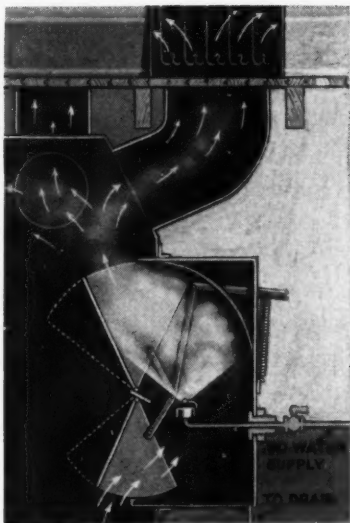


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Automatic, efficient—a comfort-maker and a fuel saver—low in cost and easy to install.

For a limited time we will make a special price to contractors and dealers on Hum-O-Zones for their own homes or for demonstrating. We know you'll be enthusiastic, and your enthusiasm will make sales—plenty of them.



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Beautiful appearance—designed for the modern livable basements.

Wins prospects' orders—a mighty important point with dealers—because it is also low in cost.

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New FURNACE FAN ASSEMBLY

TYPE C
Arrangement 2
Furnace Blower with Motor

The Type C furnace fan, less the casing, can be furnished for furnace manufacturers or sheet metal contractors desiring to fabricate their own casings or to incorporate the fan assembly in installations of special nature. Also component parts of the fan assembly consisting of the housing or wheel alone are available.

adopted as standard equipment by many large furnace manufacturing companies. Thirty years' experience in the designing and building of industrial fan equipment provides a background assuring the purchaser of efficiently-designed, satisfactorily operating units. It is also worthy of note that The Bishop & Babcock Manufacturing Company has been foremost in the designing of special blowers for the heating requirements of various furnace manufacturers since the advent of forced air circulation in the home.

WRITE FOR CATALOGS

THE BISHOP & BABCOCK SALES CO.
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Make 2 profits With this Quality Unit

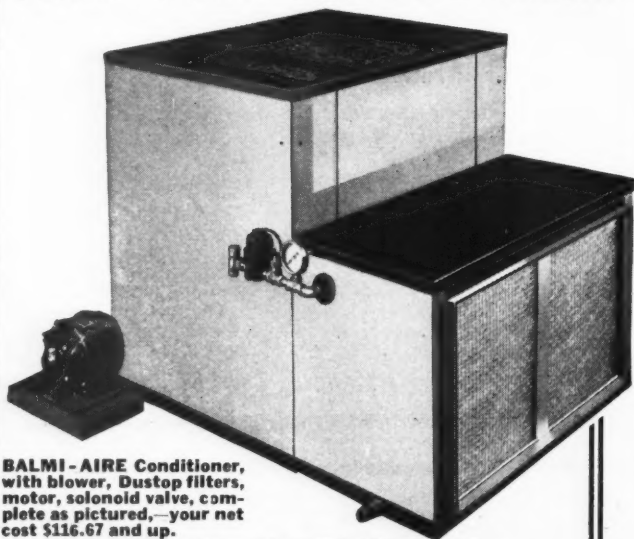
—low net cost to you \$116.⁶⁷

AND UP

Write down, so that you can see it in black and white, the actual profit in dollars that you can make on the following:

A home air conditioner with 1600 cubic feet per minute capacity, attachable to any furnace, made by a quality manufacturer, and costing you only \$116.⁶⁷ complete. Add to this profit the revenue from a job that so satisfies the customer that he refers his friends to you for similar installations. You get this double profit with BALMI-AIRE.

Filters — Washes — Humidifies — Ventilates



BALMI-AIRE Conditioner, with blower, Dustop filters, motor, solenoid valve, complete as pictured,—your net cost \$116.⁶⁷ and up.

MADE IN 4 SIZES, 1600, 2400, 3200, 4000 c.f.m.

BALMI-AIRE

HOME AIR CONDITIONER

A compact unit ready to attach to any furnace

MADE BY THE MAKERS OF

Kooler-Aire
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Sanidair
Humidifiers
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and Washers
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Made in two parts. The unit providing forced filtered air may be installed alone and the washer added later if desired. Built right, by a concern with over 6000 installations in leading theatres, restaurants, and stores. Priced right. Backed by dependable engineering service. Use the coupon to obtain full information.

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Send me full information about BALMI-AIRE Home Air Conditioners.

Name

Address

City

State

Johnston Sells Burners

(Continued from page 27)

summer offer of clock-type room thermostats as substitutes for the non-clock-type regularly furnished with the burners sold later in the season.

Another good method of field soliciting is by offering people balanced smoke pipe dampers. Often the contractor's salesmen carry these in their hands when they call on new prospects. They use them to "get their foot inside the door." Instead of immediately talking about oil burners the men open the conversation by describing their balanced damper, perhaps new to the prospect. Having outlined the value and functions of balanced draft, the men usually have secured the attention and interest of those solicited and conversation is switched to oil burners.

Special Premiums

Other summer offers have been made such, for example, as electric food mixers, special financing plans, premiums of various kinds. According to Chester Johnston, brother of the president and himself an active oil burner salesman in charge of a crew, merchandise offers are less attractive at present than those involving financial reward. For, in summer, when folk are anxious to avoid serious thoughts of making heating changes, one must intrigue dormant purchasing impulses.

It is partly on this account that the Johnstons engage in vacuum cleaning of heating plants, in some years having cleaned more than 300 heaters. Does Johnston send cheaply-hired, inexperienced men on this work? Not at all. He sends neophyte salesmen, those expecting to get into selling a little later. Such men have the necessary sales instinct essential to oil burner agency success. During their cleaning work no opportunity is lost to broach the subject of oil burners. Although this class of salesmen closes few orders, they unearth many prospects to turn over to regular salesmen.

Customer Boosting

Few methods of securing summer prospects are found superior to personal recommendations. To quote Chester Johnston, "When customers are satisfied with their burners, and 95 per cent of our customers are, they do not hesitate to talk about them. They show their units to their friends and neighbors with pride. Then, as we keep in close touch with all of our customers, they give us the names of interested friends and we lose no time in approaching them for orders.

"At times we make it well worth our customers' while to spread the good news to their friends. If we are successful in closing orders on

such leads we send our friends who did the recommending nice little checks. It costs us plenty over the period of a year, but it is the cheapest advertising investment we make at any time.

"I have often been asked whether the average sheet metal and warm air furnace contractor can sell oil burners successfully," continued Mr. Johnston. "In general, I would say, yes. It depends entirely on the contractor; I mean whether he is a 'sitter' or a 'do-er.' If he is active he is in excellent position to handle burners. He is in on the ground floor, you might say.

Heating Men Can Spot Trouble

"Sheet metal contractors know heating, know what kind of plants are in their territory, know their owners, have an established shop and are prepared to service equipment. They also can make renovations intelligently. And this is important. For no oil burner is a panacea for broken down badly engineered heating systems. But the best burner in the world will not correct faulty system design. The heating contractor, through his knowledge of what goes to make up correct heating, can often take an order for \$100 worth of repairs along with the sale of the burner.

"We find burner sales not difficult to make and I believe any heating contractor can sell plenty of them," declared Mr. Johnston, whose name has been a familiar sheet metal work by-word to local residents during the last 30 years, but who now specializes in heating appliances although continuing metal work. "In our case we place great store in our list of regular customers. Here is a gold mine some contractors overlook. 'Once a customer, always a customer,' is one of our slogans.

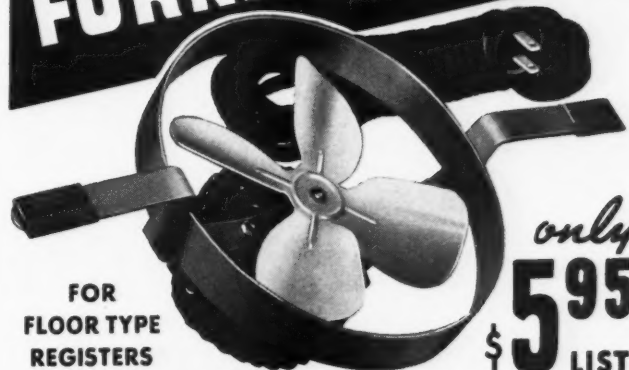
Sales Are Not Difficult

"Once having sold someone something, it is comparatively easy to sell something more to the same customer provided you have cultivated and pleased him or her. So, when it comes to oil burners, we delve into our card list, extract the most promising and ask them why they do not own an oil burner. Every sheet metal contractor has, or should have such a list. If he hasn't a list one can be built from his office records.

"To the contractor who has in mind engaging in the sale of oil burners I would say just this, 'get leads, leads and more leads and get them in the summer.' Through vacuum cleaning, advertising, contacting old customers, paying premiums to helpful users, house-to-house canvassing, heating surveys, prompt servicing of out-of-kilter units and like methods. This done, anyone of average acumen and energy can sell oil burners and earn substantial profits."



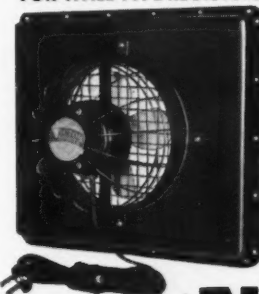
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FLOOR TYPE
REGISTERS



only
\$5.95
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HERE ARE TWO BIG PROFIT MAKERS

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SOLVE ANY
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EASY TO INSTALL

EVERY FURNACE HEATED
HOME A PROSPECT

only **\$7.50**
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Low Price Brings Fast Sales

VICTOR HEAT BOOSTERS

HOW THEY WORK



Victor Heat Boosters are installed at the register in the room that is in need of extra heat. A connection is made with the nearest electric outlet and the Booster fan immediately begins pulling the cold air "cork" out of the pipe. Within a few minutes cozy, comfortable heat is flooding the room and the Booster may be disconnected until needed again. The action is always positive and sure—it's the economical way to solve the "cold room" problem. Write for complete details today!

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Gentlemen: Send us complete information on your Victor Heat Boosters. Tell us how they will increase our profits.

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MAIL THIS COUPON TODAY!

"HVA" Fans Single, double or triple Units *for* Cooling, Air Con- ditioning, Heating

The latest Buffalo Data Bulletin, No. 2947, illustrates "HVA" fans as they are now offered to the contractor for use in cooling, heating and air conditioning work.

Available in three sizes in single, double or triple units, these quiet, high-efficiency fans are ideal for the work for which designed. When required, fans may be furnished mounted on a substantial drain-proof drip pan, affording a chassis for filter or heating or cooling coils.

If you are using fans of this type, by all means get full information on "HVA" Fans, NOW.

BUFFALO FORGE COMPANY
497 Broadway Buffalo, N. Y.
In Canada: Canadian Blower & Forge Co., Ltd.,
Kitchener, Ont.



Radiator Heated Homes

(Continued from page 29)

grees temperature, the latent heat of steam is 960 B.t.u.'s per pound, or condensing 960 B.t.u.'s equals 1 pound of water.

The steam passes into the radiator or coil where it condenses into water and flows back to the boiler to be again changed into steam. During this condensing in the radiator it gives up most of the 960 B.t.u.'s to the radiator thence into the air of the room by means of conduction, radiation and convection.

To find the pounds of steam necessary to raise a given quantity of air a given number of degrees use the formula—

$$\text{c.f.m.} \times .07488 \times 60 \times .24 \times \text{temperature rise.}$$

This gives the number of B.t.u.'s required. Then divide the total B.t.u.'s by the latent heat of steam available.

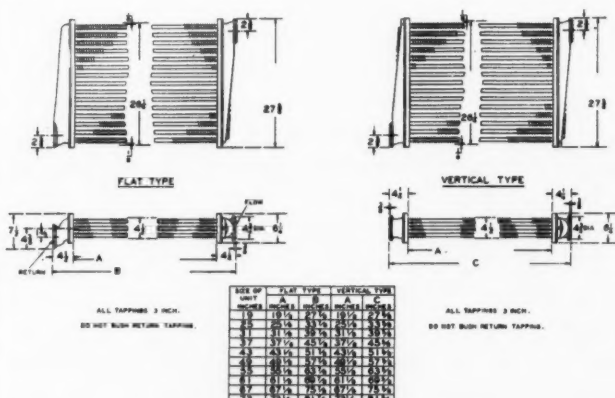


Fig. 9—Typical manufacturer's chart for heat transfer section having finned tubes. Tables give dimensions for two types.

Example: How many pounds of steam will be required per hour to raise 2,000 c.f.m. standard air from 60 to 110 degrees?

$$2000 \times 60 \times .24 \times .07488 \times 50 = 107,827 \text{ B.t.u.'s}$$

$$\text{Hence } \frac{107,827}{960} = 112.32 \text{ pounds of steam per hour.}$$

E.D.R. = Equivalent direct radiation and is expressed in square feet and means column radiation placed under windows or along walls. One square foot E.d.r. equals 240 B.t.u.'s. The capacity of the average house heating boiler is based on E.d.r., hence to find the boiler size or capacity we use the following rule:

To find E.d.r., multiply pounds of steam required per hour by 4, as one square foot of direct radiation will require 240 B.t.u.'s or $\frac{1}{4}$ pound of steam at 2 pounds pressure.

Example: What would be the size of the boiler required to heat 2,000 c.f.m. from 50 to 110 degrees?

Answer: $112.32 \times 4 = 449.28 \text{ sq. ft.}$ It is common knowledge that small cast iron boilers are very much over-rated, and it is customary to always add 60 to 150% to the calculated sq. ft. in selecting the boiler. It depends entirely on the type and make of boiler. We

will use the 60%. Hence we have $449.28 \times 1.60 = 718.84$ sq. ft. or as the trade says, "an 800 ft. boiler."

We talked about boilers and different systems in the first article. The other piece of apparatus we are not accustomed to is the heat transfer section or coil

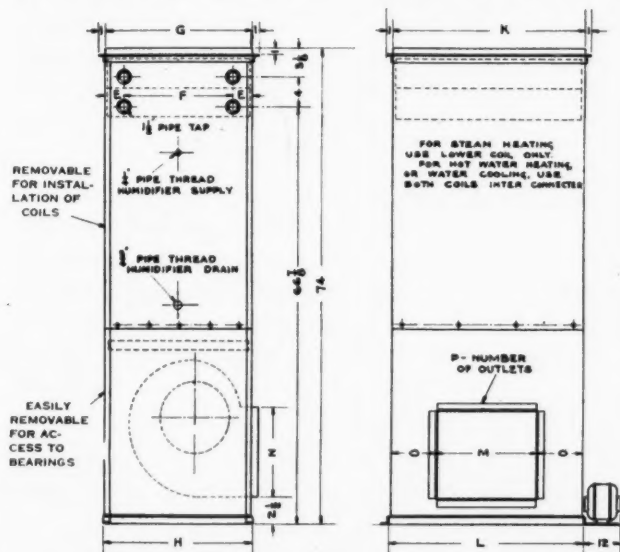


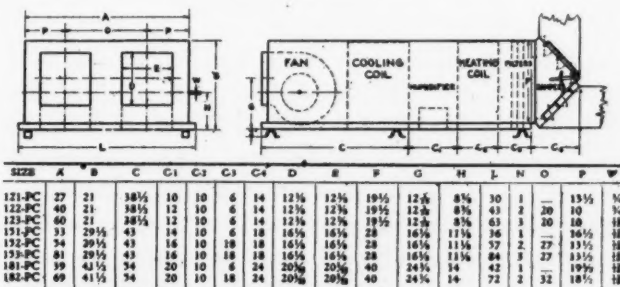
Fig. 10—A typical unit air conditioner for attachment to boiler. Such units usually contain a heat transfer surface, blower, filters, humidifiers, filters or washing sprays.

which transmits to the air the heat from the boiler.

These coils are manufactured specifically for fan system heating. They are generally made of copper or some alloy metal. They have extended heating surfaces or fins, and are highly efficient. Such a heater or coil is shown in Fig. 9. These are made in the flat or vertical type. Unless the basement ceiling is unusually high, it is necessary to use the flat type to get the return sufficiently above the boiler waterline. In this case the fan assembly is the "draw through" type. Here the fan handles the air after it has passed through the heater.

With the vertical type the fan may be placed to blow the return air through the heater coils, and this arrangement is termed a "blow through" type.

Some manufacturers provide the complete unit and one arrangement is shown in Fig. 10. Another type is shown in Fig. 11. Fig. 10 contains one unit that is used for both heating and cooling. The unit in Fig. 11 has separate cooling and heating coils.



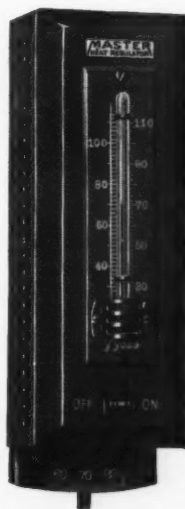
*NOTE—When heating and cooling coils are both used, positions are reversed. N=Number of Outlets.
The table below gives the flow capacity for 2, 3 and 4 row coils with various entering and leaving temperatures when delivering the full air capacity. For reduced air capacities the flow varies directly with the C. P. M. handled.

Fig. 11—Another type of conditioner, for large structures. This unit will both heat and cool; also filter and humidify.

A PROPOSITION You Should Investigate

The dealer who has survived business conditions of the past few years has done so by making a profit on his materials, as well as on his time. His jobs have not had to be done over. His public could not get better equipment of someone else.

If you are such a dealer we have a proposition for you.



TYPE 144

MASTER Heat Regulators give you double profit—a good margin on the regulator itself, and also on the installation. It is easy to install.

Once installed, the job is done. No time wasted later in trying to make it work. It is built for long-time use, with platinum-iridium contact points. It is made by a well known and respected pioneer in the industry.

Every installation is a salesman. Its action is so quick and dependable and its operation so noiseless that it exceeds the customer's expectations.

He'll refer his friends to you.

They in turn will do the same.

You are dealing with choosy critical people, nowadays.

We have the heat regulator that will satisfy them—absolutely. Let's get together.

Write today for
our proposition

WHITE MANUFACTURING CO.

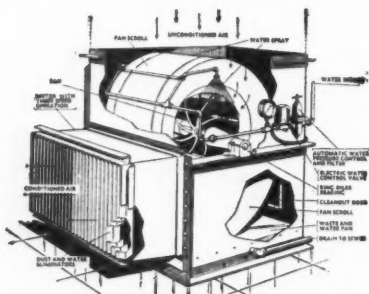
2362 University Avenue

St. Paul, Minn.

MASTER HEAT REGULATOR

AM-PE-CO AIR WASHER-BLOWER

**Washed PLUS
Humidified Air ---
at one unit cost**



—4 years of proven superiority on actual jobs

**Air "DOUBLE WASHED" by
Improved Combined Unit**

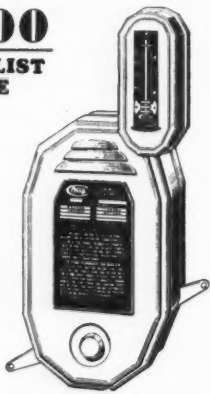
Washer and blower are COMBINED with 100% efficiency in this new, improved Am-Pe-Co unit. Air *double washed* — as it passes through sprays, then scrubbed in its vortical movement through scroll. Radical improvement over double installations. Saves cost; easier to install; makes more satisfactory job in less floor space. Investigate this.

Write for detailed literature and prices now.

AMERICAN MACHINE PRODUCTS CO.
Marshalltown, Ia.

\$25⁰⁰
LIST
COMPLETE

**PROFITS in
COOK HEAT
CONTROL
for You**



Cook Heat Control Is Noiseless

IT CONTAINS NO SPRINGS, GEARS, OR
ELECTRIC MOTOR. THERE IS NO FRICTION.

NO LUBRICATION IS NECESSARY

There Is No Service

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SAFE, RELIABLE. FULLY GUARANTEED.

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COOK ELECTRIC COMPANY

2700 SOUTHPORT AVENUE
CHICAGO, ILLINOIS

Automatic Controls

(Continued from page 30)

does not control the fire, but operates a mixing damper motor which controls the temperature of the air entering the duct supplying the room or zone. This division of the air supply system into individual or zone trunks with a thermostat and damper motor for each duct accounts for the additional cost.

How the System Operates

To explain how the system operates we will assume that our house has four zones, therefore we have four trunk lines from the furnace. These mains are not tapped into the usual bonnet. Instead (and this is the second feature) a special plenum chamber houses the furnace. The detailed sketch shows the principle and construction. In brief, the fan blows air through the casing in two streams. The hot air stream passes over the hot furnace surfaces and into the hot air plenum. The second stream of air is blown into the cool air plenum and is not heated by the furnace. The hot air and cool air chambers are separated and open into the ducts through throats in which are located two leaf dampers. Each damper is operated by a damper motor. Both blades are directly connected to the motor so that both must move together.

As stated, the thermostats do not control the fire, but control the mixing dampers at the duct throats. Let us say one room or zone calls for heat. The two-bladed mixing damper is standing in a certain position—let us say with both hot and cool air throat about half open. (Some additional information on this a little later on.) The thermostat element responds to the effect of cooling room air and begins to move. Since this thermostat element is connected to the damper motor the damper motor moves directly with the thermostat element. As the thermostat element continues to move under the effects of room air getting cooler, the damper motor moves so as to gradually open the hot air chamber throat and close the cool air chamber throat. The result is that the proportion of hot air to cool air increases and the air passing into the duct supplying our room increases in temperature.

Damper Motors

A word now about the damper motors and dampers mentioned in the last paragraph. There are on the market today two general types of damper motors —pneumatic and electrical. Both types are called gradual operating motors. In the pneumatic type, the motor is so designed that it can fluctuate in either direction. It can move both ways as required by the thermostat to completely open either hot or cool air throats or it can fluctuate through a small movement at any point in between full open or closed. These damper motors operate through bellows which react to air pressures maintained by an auxiliary air pump.

Electric damper motors for controlling the mixing dampers should be of the reversing multi-position type. These damper motors, which are powered by small reversing type induction motors, are actuated by conventional low voltage three-wire room thermostats in a manner such that the mixing dampers may be held in any position from the full open position to the completely closed position in accordance with the demands of the thermostats.

Damper motors of this type are available with an adjustable speed governing device by means of which conditions peculiar to the particular installation may be compensated for after the job has been installed and is in the process of being balanced.

Don't Use Draft Motors

Many contractors think that the type of motor we are familiar with—the damper motor which operates draft and check doors on a furnace can be used. Right here it should be said for those who believe this type of motor can be used in a mixing damper system—such motors won't work satisfactorily. Why? Because the result of their use is alternate blasts of cool and hot air which are not comfortable to the owner. Such motors violate the basic principle of this system—namely, ability to effect gradual and small changes in register air temperature so that the room air never varies more than one degree either way.

Assuming that this system has been sold and is to be installed what are the problems likely to be encountered and what solutions should be used?

Too Cool Register Air

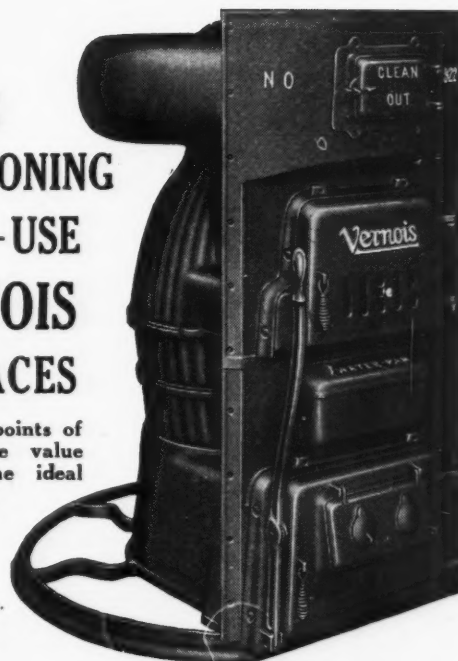
Perhaps the commonest question is—"how with this system do we prevent air which is too cold from entering the room?" The usual practice is to use an auxiliary thermostat placed either in the cool air chamber or in a typical duct and set for the minimum air temperature which can be safely blown into the room or house. Just what this temperature is will depend on several things. If registers are high sidewall we know we can blow relatively cool air into a room without giving a feeling of chill. If baseboard or floor registers are used the air temperature must be higher. Second, the velocities must be considered. The higher the velocity the higher the register air temperature required. Third, the amount of glass or outside wall area must be considered. Since the fan runs all the time and the c.f.m. is constant we must introduce enough heat to keep these exposed surfaces reasonably warm. We may find, therefore, that while 90-degree air could be introduced without a feeling of chill such a temperature would result in such cool air at the outside walls as to offer little warming effect to these exposed surfaces. This being so we may find a higher temperature desirable.

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Direct Drive Blowers
and Automatic Two
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THE PEERLESS ELECTRIC CO.
Fan & Blower Division
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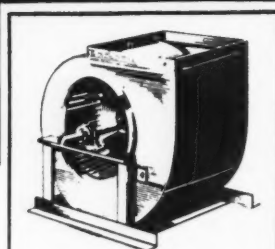
FAN WHEELS, ASSEMBLIES

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CLARAGE has much to offer you as a source of supply for furnace fan wheels, complete fan assemblies or air conditioning equipment.

We have been in this business almost a quarter century. Clarage products are the result of experience, research and sound engineering. And the line is complete, with suitable types and sizes to meet every capacity, operating speed and service condition.

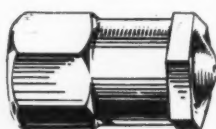
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Fan Assembly.



Double Multiblade Wheel.



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is just off the Press. It tells you all about America's foremost Air Conditioners.

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The Peerless Foundry Co.
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This auxiliary thermostat is, of course, wired into the room thermostat-mixing damper motor circuit. Whenever the air in the duct or cool air chamber falls to this low setting the mixing damper motor is actuated to increase the proportion of hot air. There can be, of course, conditions (say very mild weather) when such an arrangement tends to overheat the house, but such conditions ordinarily will not be encountered during a heating season, because the setting of this instrument will be very nearly the room temperature setting of the room thermostat.

Fire Control

Another question frequently asked is—"what controls the fire?" In this system we use a "high limit" hot air plenum thermostat. Such a thermostat has a variable range of as much as required to heat our house. Whenever hot air chamber temperatures reach the "high" setting of this instrument the fire is checked. Whenever hot air chamber temperatures reach the "low" setting of this instrument the fire is accelerated. The range between "high" and "low" may be 25 or 50 or 75 degrees according to the needs of our house and the responsiveness of the furnace and fuel. The same recommendations for selecting and setting this instrument apply here as with any other control system where a limit control is used.

Again attention should be called to the need for a sensitive thermostat. This control system has every ability to maintain room temperatures within a range of less than 2 degrees. If proper firing is furnished, there need not be more than 2 degrees difference in room temperatures from fall to spring. But the system cannot deliver this ultimate satisfaction if the room thermostat is sluggish or not sensitive to changes of less than several degrees.

A Summary

To summarize—this system has all the inherent qualifications of a control system we can honestly recommend as giving the owner the kind of winter conditions he hopes for. It gives individual room control so that one room can be kept at 85 while the next room may be only 68. All the owner has to do is move the pointer on the room thermostat. The constant running of the fan gives air change, circulation; eliminates stratification. No changes need be made in instrument settings because the system adjusts itself to the weather. As Professor Willard pointed out to the furnace manufacturers this June, this system adjusts temperatures to the weather, something we probably will all come to eventually.

The only fault (if it can be called a fault) is that the system is expensive. More apparatus is required than for other systems discussed previously. But offsetting is the fact that in this system we are giving the owner what he thinks of as ideal winter conditions and operation.

Attic Ventilation

(Continued from page 34)

ond story alone as it was when all of the windows on both stories were opened.

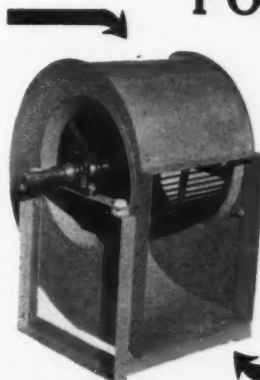
Curves Nos. 3 and 5 show that when the fan was used in connection with the second story alone there was more marked improvement than there was when it was used in connection with both stories. This is indicated by the fact that the distance between curves Nos. 3 and 5 is greater than that between the corresponding curves in Fig. 6, and also by the fact that curve No. 5 lies above curve No. 4 which has been transferred to Fig. 7 from Fig. 6. Considering curve No. 1 in Fig. 7, it is also evident that natural ventilation on the second story alone resulted in a very small temperature drop on the first story as compared with the average for the house shown in Fig. 6 resulting from natural ventilation on both stories, and while the use of the fan as shown in curve No. 2 resulted in some improvement the drop was still not comparable with that occurring when either the fan or full natural ventilation was used in connection with both stories.

Daytime Attic Ventilation

A few tests, designated as *Series 12*, were run with the attic ventilated during the day by means of the attic fan instead of by natural ventilation through the windows. The temperature of the air in the attic together with the temperature of the surface of the ceiling and the air in the rooms of the second story for a characteristic day, are shown in Fig. 8. The temperatures of the air entering the fan and leaving the attic windows are also shown in this figure. These temperatures taken in connection with the volume of air delivered by the fan afforded a means of calculating the heat absorbed either from the attic or second story alone, or from both.

Considering the attic alone, during the day the air from outdoors entered the fan through the duct shown in Fig. 3 and was forced out through the windows. Thus the temperature rise was representative of the heat absorbed from the attic. A comparison of the power required by the fan motor for day and night operation indicated that no appreciable reduction in fan capacity was caused by the duct arrangement used during the day. Hence the full fan capacity of 3980 c. f. m. was used in the calculations for curve *A* shown in Fig. 8. This curve gives the heat absorbed from the attic and shows a maximum rate of 15,600 B.t.u. per hour, or the equivalent of 1.3 tons of refrigeration. However, a comparison of the results from two similar days, one with the fan in operation and one without, showed no appreciable lowering of the temperature of the air in the attic resulting from the use of the fan, and no appreciable difference in either the temperature of the surface of the ceiling or of the air on the second story for the two cases. The temperature of the air in the attic was measured at two points, approximately 4

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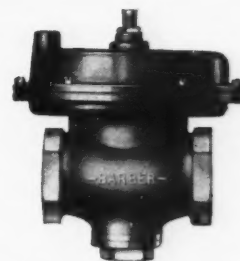
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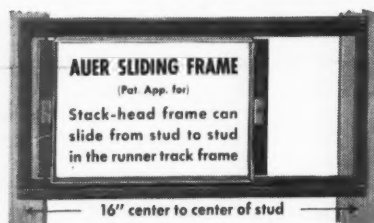
Furblo operates quietly because it is scientifically built for quiet operation without felt, rubber or other insulating material.

Furblo's motor, housing and blower are mounted separately to prevent vibration. Canvas connections between blower and furnace prevent noise. No mechanical seams or spot welding are used for the heavily constructed squirrel housing. Sides and wrapper of the housing are acetylene welded to insure air tightness and absence of noisy vibration.

Every possible precaution is taken to insure complete satisfaction with your Furblo installation.

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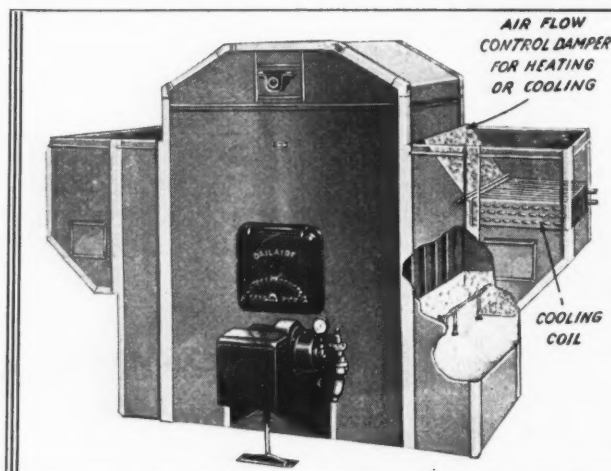
feet above the floor. Hence it is probable that the temperature of the air in the peak of the roof and near the attic ceilings when no fan was used was much warmer than the air nearer the floor where the measurements were made. This formed a stationary pool of hot air above the level of the windows that served to reduce the heat transmission through the roof and to insulate the air nearer the floor. When the fan was used this pool was swept out.

Effect on Second Story

Thus, while the fan apparently removed a large quantity of heat from the attic during the day, no appreciable improvement in conditions on the second story resulted as compared with conditions existing when the attic was ventilated by means of open windows alone. More refined methods of testing might have indicated a slight difference, but if the difference was sufficiently small to demand more refined testing methods, the cost of operating the attic fan during the day could not be justified under the conditions existing at the Research Residence. It is possible that in a poorly ventilated attic, with no windows, or with small windows in positions not adapted to cross ventilation, the daytime use of an attic fan is entirely justified.

Rate of Heat Removal

The rate at which heat was removed from the first and second stories by the operation of the attic fan at night is shown by the curve *H* in Fig. 8. In this case the air was drawn into the windows from outdoors and all of the air passing through the house was delivered by the fan. Hence the difference in temperature between the air entering the fan and that outdoors was representative of the heat absorbed from the first and second stories. It may be noted that this heat amounted to approximately 12,000 Btu per hr or the equivalent of one ton of refrigeration, over a period of about 3 hr. Since approximately the same amount of heat loss would occur by conduction to the outdoors through the exposed walls, irrespective of whether night air was or was not circulated, the amount of heat represented by curve *H* represents in some measure the gain resulting from the circulation of air from outdoors at night.



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Complete 8-stage Air Conditioning or any part thereof in one unit.

A special furnace for each type of fuel.

69 combinations of equipment to solve any heating problem. The most complete line available today, ranging from 100,000 B.t.u. to 800,000 B.t.u. capacity.

Dailaire units have been field tested for 5 years.

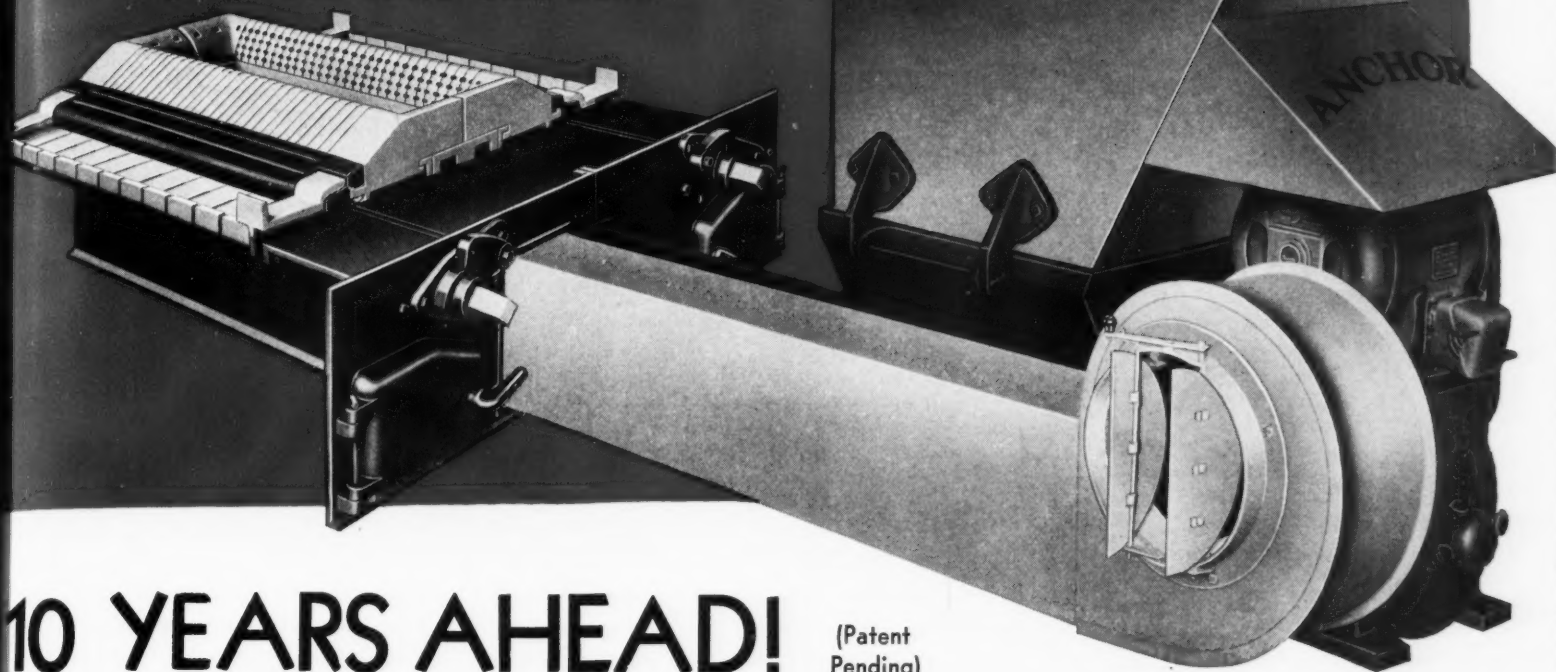
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In efficiency, economy and all other features of stoker superiority, the Heavy Duty Industrial Type of the Anchor KOLSTOKER is just as far ahead of the field as the smaller residence model in its class. Its advanced engineering and its outstanding efficiency are well illustrated in the special feature of the Side Ash Dump. The ash and slag drain to the dump plates at the sides of the stoker. When these plates are dropped, the clinker and ash fall into the pit, where they are cooled and largely disintegrated by water from a spray pipe before re-

moval. They are then easily removed through the pit doors, without the blistering heat and stifling gases usually incident to cleaning out ash and clinker. In the Heavy Duty type, the Anchor KOLSTOKER is built in stock sizes to provide a maximum coal feed of from 300 to 500 pounds per hour. Adjustments permit eight different rates of feed. The hopper design insures free feed of fuel to worm at all times, preventing arching of coal in the hopper base. Experienced engineers, distributors and dealers have given the KOLSTOKER immediate acceptance as the

BEST-ENGINEERED STOKER ON THE MARKET TODAY



In the residence type, the Anchor KOLSTOKER meets the big demand for efficiency and convenience, at low first cost and minimum operating expense. It appeals to the eye with its advanced and attractive cabinet design. It appeals to the purse with its economy and performance. The Anchor KOLSTOKER is designed for homes, churches, green-houses, hotels, apartments, schools, laundries, dry-cleaning plants, factories, store-buildings, etc. Nine stock sizes; larger models built to order. Can be easily installed in any furnace or heating plant now in service. Tremendous sales possibilities for wide-awake distributors and dealers.

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ZONE HEATING WITH FORCED AIR—USING “GENUINE DETROIT” Controls



FOR houses of many rooms, or of the rambling type, Zone Heating gives uniform, even temperature in all rooms, quicker response when heat is needed and saves fuel by preventing overheating. The house is divided into two or more zones with main ducts serving each zone. A thermostat placed in one of the rooms of each zone is connected with a "Genuine Detroit" No. 431 Motor Unit, which operates a Damper on the duct serving the zone. Any one thermostat will start the fan and "turn on the heat" whenever increased temperature is required in its particular zone. When the thermostat is satisfied, it closes the zone damper and shuts off the heat, provided all other thermostats are satisfied. Otherwise, it simply closes the damper in its own duct and the heat supply continues until all zones have reached the desired temperature.

"Genuine Detroit" Motor Units operate absolutely silent, so that they can be placed right on the duct. Their two-wire system makes them easy to install and assures minimum installation cost. Write today for complete information.

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New PRODUCTS

Pipe Machine

The Yoder Company, Cleveland, Ohio, announce two special lock seam stove pipe forming machines. One is designed to produce both straight and tapered pipe; the other straight pipe only. Both these machines are motor driven through V type belts and quiet worm drive.

Machines are provided with adjustment for various gauges and diameters of stove pipe. Various types of lock seams can be accommodated by changing the design of the seam forming rolls.

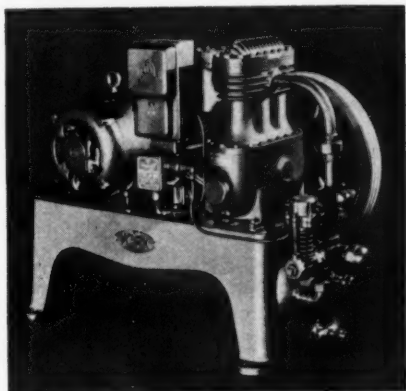
The sheared or blanked sheet is fed into the entering rolls and the edges are progressively formed for the lock seam.

This sheet is then delivered to a transfer table where the sheet is transversely fed into an automatic coiling and crimping device.

These machines will produce from 30 to 40 sections of stove pipe per minute.

New Condensing Units

The completion of two new Freon condensing units, consisting of 3 H. P. Triple-Cylinder and 7½-H.P. double cylinder Balanseal Compressors is announced by the Commercial Division of the York Ice Machinery Corporation. The introduction of these two new units increases the number of



York Freon Refrigerating units of the Balanseal series now available to fourteen popular sizes, ranging from ¼ to 7½ horsepower.

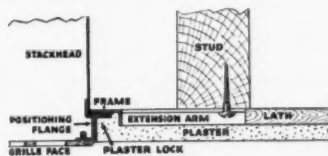
The triple-cylinder unit is a 2¾-inch, 3 H.P. compressor, with water-cooled condenser. The space required for this compressor unit is narrower and lower than previous models, this

reduction in head room permitting of its installation within smaller areas than was possible with previous units of the same size and capacity.

The new York Balanseal Double Cylinder unit, of 7½ H. P. capacity, operating at slow speed (440 R.P.M.) develops 82% of the capacity of preceding York models and requires only 75% of the horsepower. The design of the double-cylinder Balanseal unit permits multiple application on air conditioning loads requiring 15 H.P. or similar multiples.

Forced Air Register

The new Hart and Cooley Mfg. Co. 3-piece Forced-Air register consists of three main parts: a frame, a positioning flange, and the grille face, and when installed as recommended, insures a permanently streak-proof in-



stallation since the frame and stack-head are completely imbedded in plaster.

The rigid frame-supporting extension arms are made of sufficient length on all sizes to fasten directly to the studs without any blocking-in or special carpentry work. The frame thus forms a solid base for the stackhead, which is bent over the frame and held securely in place by means of the positioning flange. The positioning flange is located accurately from the frame, so regardless of any unevenness or variation in the gauge of the stackhead, the combined depth of the frame and the flange is always the same, namely ¾-inch. The frame provides a positive plaster lock insuring that the plaster will not pull away from the frame.

New Motors

A new line of direct-current motors, designed for applications where dust, dirt, moisture, or other foreign matter is present in large quantities, has been introduced by the General Electric Company. The new motors are

totally enclosed and fan-cooled, and are available in a wide variety of electrical and mechanical modifications—in sizes from ½ to 200 hp.

A system of dual ventilation is utilized. This together with water-tight conduit boxes, and labyrinth seals at the cartridge-type bearing housings effectively protects the working parts of the motor. An internal fan draws the warm air from the windings and core and circulates it around the totally enclosed interior of the motor so that it gives up its heat to the frame and end shields.

Oil Furnace

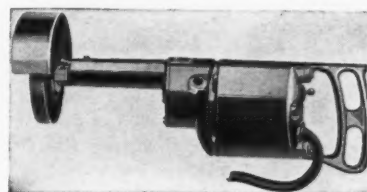
Announcement is made by Dail Steel Products Company, Lansing, Michigan, of a new series of 0-100 and 0-200 furnace designed especially for oil burning.

This unit is designed to compete in the low price field. The particular features of interest are the large radiating surface and higher than ordinary efficiencies. The unit will be made in two sizes with special box type radiators on both sides of the combustion chamber. The unit can be had with either top blowers and side washers or dry filters, or can be used with floor blowers and washers. The units are rated from 2¼ to 3¼ gallons of oil per hour consumption and from 205,000 to 318,000 Btu per hour output.

Literature and information on the units can be secured from the company.

Portable Grinder

A portable, light-duty electric grinder is announced by Signal Electric Mfg. Co., Menominee, Michigan. Body and handle are cast aluminum;

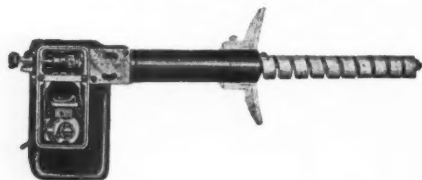


the entire weight is 9 pounds net. Universal motor for D. C. or A. C. 110 volts, 25 to 60 cycles. Speed no load, 3400 R.P.M. Amperes 1.5; positive "make and break" toggle switch. Brushes are accessible from the outside. Bearings are bronze, wool packed with thrust ball bearing on shaft wheel.

Panel Blowers

Peerless Electric Company, Warren, Ohio, is marketing a line of blower units mounted on a panel which is designed to be attached to the structural framing of a furnace casing or mounted either vertically or horizontally in the contractor's special fan cabinet.

Four sizes are offered ranging from 575 to 3,600 c.f.m. against $\frac{1}{8}$ -inch static



pressure. The special unit equipment includes the rubber mounted variable speed capacitor motor, wheels, wheel housings, base or panel, and a three-speed motor controller.

The company also is introducing a new automatic two-speed fan control. With these units control of the blower speed is obtained through change in furnace casing temperature. The low bonnet temperature operates the fan at slow speed. At high speed the blower runs at full capacity.

Full information on these new units and also on the company's other products are illustrated and explained in catalog No. 201, which may be obtained by writing the company.

New Type Window

A revolutionary type of double glazed window, known as Thermopane, which substantially reduces heat loss through windows and prevents frosting in cold weather, is being acquired by the Libbey-Owens-Ford Glass Company through a newly organized subsidiary, The Thermopane Company, it is announced.

The product consists of two panes of glass fitted in each window sash to provide a dehydrated air space between the glass.

It is claimed that the Thermopane principle, beside preventing frost formation, eliminates condensation on the glass of windows, unless the inside humidity is excessively high.

The Libbey-Owens-Ford Glass Company has completed arrangements to acquire the business, patent rights, and good will of Charles D. Haven of Milwaukee, who, for the past four years has been producing the new type of window. Mr. Haven will be president and operating head of The Thermopane Company, which will continue operations in Milwaukee.

Temperature Control

The Weatherstat, announced by Minneapolis-Honeywell Regulator Company, is an outside control which responds to all of these four weather factors and the reaction of the Weatherstat to these outside conditions enables it to immediately compensate for outside changes by supplying more or less heat to the building or zone it controls as required.

The Weatherstat is applicable to almost any type of building having one of the following types of heating systems:

1. Steam or vapor furnished at a relatively constant pressure; 2. Steam or vapor furnished intermittently by a gas or oil burner; 3. Hot water under forced circulation. In the latter two types of heating systems, provision must be made for keeping the boiler water up to a predetermined temperature at all times in order to prevent a time lag.

The Weatherstat consists of a mass of iron shaped to contain a thermostatic element with the necessary electric contacts, and arranged to house a small electrical heating element.

The heat release from the electrical heating element bears the same relation to heat losses from the control housing as the heat release from the heating fixtures within the building bears to heat losses of the building.

Being subject to the same weather influences, and the same relative rate of heating and cooling, the temperature throughout the zone or building and the temperature within the control housing will maintain a fixed relationship, and the temperature in the control housing can be used as the pilot temperature or control temperature for the zone or building.

Brazing Alloy

The introduction of a new, low melting point brazing alloy in which silver is an important ingredient and which flows freely from 300° to 800° lower than other brazing and welding rods is announced. It is said to be extremely fluid and to penetrate deeply into the metals to be joined. The joints made resist shock and continued vibration as has been proven by several years of service on battleships, locomotives, airplanes, automobiles and in electrical and refrigerating equipment.

This alloy containing silver also resists corrosion as well as the brass or copper with which it is commonly used, and proves invaluable in making chemical, food and brewing equipment such as tanks, vats, cooking utensils,

stills and in joining pipes and tubing. This alloy, called "SIL-FOS," is manufactured by Handy & Harman, 82 Fulton St., New York City.

Small Drill

The Stanley Electric Tool Company, New Britain, Conn., has recently brought out a sturdy, inexpensive electric drill with a $\frac{1}{4}$ -inch chuck capacity, known as "Stanley No. 14 Jun-

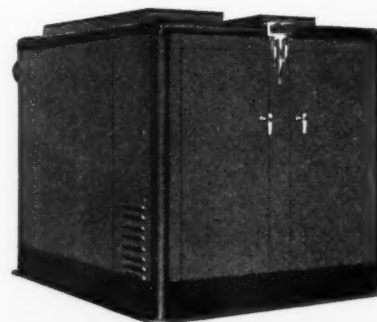


ior." It is recommended for light drilling in metal and composition materials and for running wire wheel brushes, buffing wheels and carbon removing brushes.

Drill has a Universal motor that operates on either D.C. or A.C. 60 cycles or less and can be furnished in all popular voltages.

Conditioner

Delco Appliance Corporation, Rochester, New York, subsidiary of General Motors, announce the Delco-Heat Conditionair of unit construction. Stream-line heat transfer unit of "teardrop" design. Three pass heat transfer surfaces. Unusually large heating area dotted with heat projectors which transfer maximum heat to flowing air. Combustion chamber refractory liberates stored heat after burner has ceased operating. Purifies, hu-



midifies, automatically heats, circulates air and changes it completely every ten to fifteen minutes. Attractive furniture-steel cabinet in Jade and Killarney green with chromium trim. Symmetrically proportioned. No exposed mechanism. Burner mechanism outside heating zone; soft, radiant flame. Burner, controls and blower motor readily accessible. Quiet, large capacity blowers. Aquator of cascade design moistens air. Automatic controls consist of Thermostat or Chronotherm, Protectorelay, Airstat, Furnacestat and summer switch.

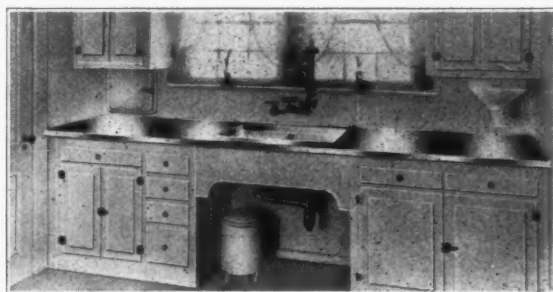
DAY IN— AND OUT

. Shearing costs are either trimming your profits or adding to them.

Viking Shears are *adders*—as thousands of users know. They add to your earnings by working smoothly, easily, uniformly and for a long, l-o-n-g life of service. It's "shear" common-sense to remember and say

"V I K I N G"

V I K I N G
S H E A R C O .
E R I E . . . P A .



One Installation of APOLLO ChromCopper Offers a Marvellous Avenue to Repeat Business

One housekeeper who can boast about APOLLO ChromCopper on her kitchen table will do more for your business than a ton of printed literature. And boast she will—to her friends to give them the good news; to her enemies, to excite envy.

Sooner or later they will be demanding of their husbands the same miracle metal that never discolors, never warps, nor stains, nor rusts. The metal that is cleaned by merely washing with soap and water—APOLLO ChromCopper.

This is a strong statement. But the experience of other contractors is the basis on which we make it.

Order a couple of sheets today—for that first installation.



APOLLO COMPANY

BOX AA

LA SALLE, ILLINOIS



Series "C"
Cast Furnaces

NO MATTER WHAT

The Prospect Asks For

You have the answer in one of the many units comprising the complete Moncrief line,—cast and steel furnaces, and air conditioning systems for gas, coal or oil.

These modern equipments reflect high quality and big value, and put you in position to handle any kind of job with the utmost satisfaction.

Write for details on the Moncrief proposition

THE HENRY FURNACE & FOUNDRY CO.
3471 E. 49th St. Cleveland, Ohio

MONCRIEF

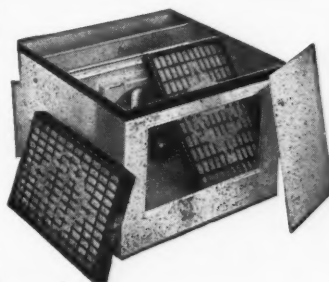
We Supply Everything Used on a Warm Air Heating Job.

AN EASY APPROACH TO AIR CONDITIONING

Write for particulars

MILES Junior Air Conditioner

Easy—because it's easy on the home owner's pocket-book. The biggest value in winter air conditioning on the market today. Miles By-Pass Louvre is a patented exclusive feature. You can sell this equipment and make money.



\$68⁶⁰
(To dealers)

Complete with
Controls and
Filters

YOU CAN ALWAYS DEPEND ON ROUND OAK FURNACES

For Efficient Service



MOISTAIR BOILER-PLATE

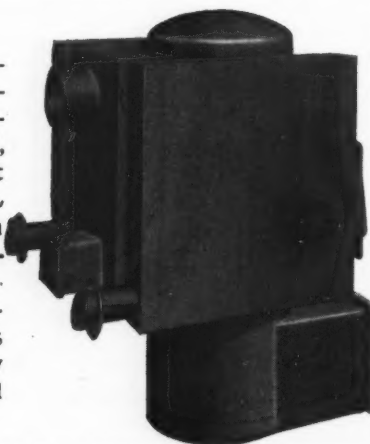
Arc-welded of copper - fused boiler-plate—it is dust and gas tight. Direct draft damper control—large mill fitted doors—special designed water pan are a few of the features making it a better steel furnace.

Note—For contractors and Builders who want a low priced steel furnace we offer the Thrift steel supplied in four sizes.

**NOW AS ALWAYS ROUND OAK FURNACES
SELL—LET US HELP YOU GET YOUR SHARE**

OIL MASTER

New and different in design—built of copper-alloy, arc-welded, gas and dust tight, the OIL MASTER is a most efficient, dependable and economical oil burning furnace. It is adapted for any good type oil burner.



Remember we offer a complete line of COAL—OIL—GAS FURNACES.

Wire or Write for Complete Information

ROUND OAK FURNACE COMPANY

Dowagiac

Michigan

Distributors

Sioux Falls Corrugating Company, Sioux Falls, So. Dak.
Haw Hardware Company, Ottumwa, Iowa
Watloo Metal and Manufacturing Co., Waterloo, Iowa
McIntyre Company Fond du Lac, Wisconsin

News Items

George Boeddener New Fox Sales Manager

C. A. Olsen, President, The Fox Furnace Co., Elyria, Ohio, announces the appointment of George Boeddener as General Sales Manager of The Fox Furnace Company, succeeding Leon A. Selman who died last June. Mr. Boeddener has served The Fox Furnace Company in various sales capacities for the past several years and is personally acquainted with the heating trade in many sections of the country. His entire business life has been spent in the heating industry, having been associated with American Radiator Company and also National Supply Company, heating supply jobbers of Toledo, Ohio.

Announcement is also made of the appointment of C. L. Travers as assistant sales manager.

Arnold Peterson Resigns

The Automatic Products Company of Milwaukee, manufacturers of automatic control equipment, announce that Arnold E. Peterson has resigned as sales manager of that company.

Conference of National Industrial Advertisers

Announcement is made that the National Industrial Advertisers' Association will hold their 1934 convention in Cincinnati on September 20, 21 and 22. Headquarters will be in the Netherland Plaza Hotel.

The program for the convention is being prepared and announcement will be made shortly.

The committee in charge of the program are aiming to give those attending entertainment and recreation exceeding anything the convention has offered heretofore.

Furnace Manufacturer Changes Name

The St. Louis Heating Company of St. Louis, Mo., manufacturers for over 50 years of "Home Comfort" furnaces and air conditioning units, announce a new company name—"Home Comfort" Furnace and Manufacturing Company.

The company announces that considerable change has been made by the research department in the entire line of furnaces and air conditioning units and that new items will be announced shortly.

C. A. Palmer Elected President of Burt Co.

C. A. Palmer has been elected president and general manager of the Burt Manufacturing Company, Akron, Ohio, to succeed Asa G. Palmer, whose death was announced in the June issue of AMERICAN ARTISAN.

Mr. Palmer has been connected with the Burt Company since 1921, in the ventilator sales department, and since 1923 has been secretary of the company.

Death of Harry Tuemler

Harry W. Tuemler, in charge of sales for Newport Rolling Mill Co., Newport, Kentucky, died June 28 at his home in Covington. Mr. Tuemler had been connected with the Newport Company for 32 years.

Thorne Resigns From Holland

Announcement is made that, effective July 2, H. W. Thorne, resigned as president and treasurer of the Holland Furnace Company, Holland, Michigan. No announcement is made by the company as to a possible successor to Mr. Thorne.

News Items

Chicago License Reduced

As a result of many months of activity by the members of the Furnace and Sheet Metal Institute, the Master Furnace and Sheet Metal Association and the South End Employers Association, the Chicago City Council has reduced the license fee from \$50.00 to \$25.00 for the first year and a flat rate of \$10.00 renewal fee thereafter.

The three Chicago associations have been fighting for this change in the license fee in order that the cost of a license would not constitute too heavy a burden for the small warm air heating shop.

The cost of taking out a permit for each furnace installation remains at \$5.00 as in the past. The associations felt that with this reduction in the license fee every contractor, no matter how small, can well afford to pay the fee and take out a permit for every job installed. Contractors violating the provisions of the revised ordinance will be subject to a fine of \$100.

Ninth Edition of the Standard Code

The National Warm Air Heating and Air Conditioning Association, Columbus, Ohio, is now prepared to mail to contractors the Ninth Edition of the Standard Code.

The association announces that the Ninth Edition varies only slightly from the Eighth Edition; the changes being briefly as follows: Under Article 3, covering the method of determining sizes of leader pipe, stacks and furnaces, note 6, the value 800 is for one air change per hour. A table is given for 1, 1½ and 2 air changes for various types of rooms.

In limitations of the code, Paragraph e, Section 9, the words "round firepots" have been deleted making furnace rating formula applicable to all common types of construction having ratios of heating surface to grate area between 15 and 30.

The most noticeable change in the new edition is a rearrangement of material in order to make the code more attractive and easier to use.

Contractors wishing copies of the Ninth Edition may write us.

Revere Appointments

Revere Copper and Brass Incorporated, 230 Park Avenue, New York City, announce the appointment of C. A. Macfie and C. C. Felton as vice presidents of the company with headquarters in the New York offices.

The company also announces the opening of a branch office at 911 Rhodes-Haverty Building, Atlanta, Georgia, under the managership of Walter W. Fitts.

Contractor Opens New Office

Roy H. Dose writes us that as of July 9 his company—Roofings, Inc.—will be located in their own shop at 266 Walnut Street, St. Paul, Minnesota.

Mr. Dose states that the new shop is modern in every respect with ample shop and storage facilities for the carrying on of all kinds of roofing and sheet metal work.

Mr. Dose makes the interesting statement that this move to new quarters was made necessary because of the company's desire to be located permanently in the heart of St. Paul and because the company believes the building business is on the up-grade.

Furnace Manufacturing Industry Code

Copies of an amendment to the Code of Fair Competition for the Warm Air Furnace Manufacturing Industry, as approved June 27, have been received from the United States Government Printing Office in Washington. The amendment to the code makes provisions for the incorporation of the code authority in all necessary states or regions of the country. The amendment also covers such controversial points as proper measurements for firepot dimensions and the approved method of rating furnaces in terms of square inches of warm air leader pipe area. The amendment also covers the matter of setting up the industry's budget cost.

The FEDERAL HOUSING ACT

can't help but increase
YOUR interest and business in

F. Meyer & Bro. Co.'s HANDY
Pipe and Duct Work for Air
Conditioning & Forced Air
Heating, and

HANDY Furnace Pipe for
Every Requirement of Every
Job.

AND We Are Ready to Supply
Your Every Need of
Materials Needed in Warm
Air Furnace Installation.

Our Catalogues No. 49 and Supplement to 49 (Forced Air Duct Work) are Yours on Request.

F. MEYER & BRO. CO.
Peoria Illinois



**"It's the everlasting teamwork
of every bloomin' soul"**

KIPLING said it, and we repeat it. But Armco Distributors and we people of Armco have a lot more to offer you than words. We want to work with you in making profitable sales, in holding old customers in the tightest hand-grip of all—satisfaction. One way we try to cooperate is through the columns of **INGOT IRON SHOP NEWS**, a helpful, stimulating monthly paper free to all contractors. Other ways are the valuable business-building services—direct mail pieces, job cards, shop and truck signs, and all the rest. Booklets on cost accounting and pattern drafting are also important in this cooperative picture, to say nothing of easy-working, durable, customer-satisfying **INGOT IRON**. Remember these things when you buy sheet metal. And also remember that your nearest Armco Distributor not only sells good iron but *helps you sell it with profit*.

THE AMERICAN ROLLING MILL COMPANY

Executive Offices:

Middletown, Ohio



**THE SHOP-SAVING IRON
THAT SELLS EASIER**

News Items

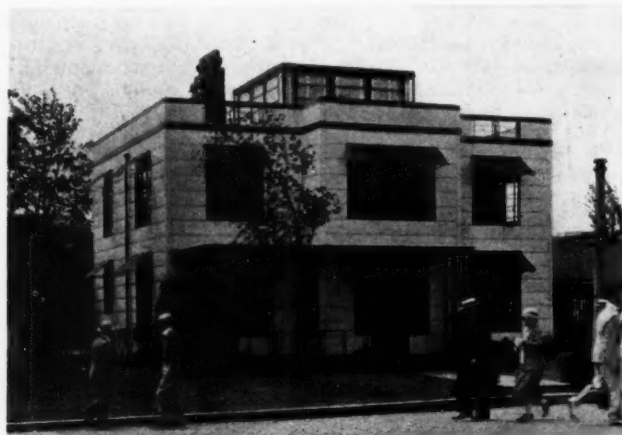
Free Rule

Auer Register Co., 3608 Payne Avenue, Cleveland, Ohio, manufacturers of registers and grilles, will supply free of charge to contractors a new celluloid six-inch rule containing on the back the circumference and area of round pipe with the diameter, circumference and area in square inches. A supplemental table gives common register sizes and face areas.

Porcelain Enameled House at Fair

Almost a million and a half people visited the porcelain enameled frameless steel house at the World's Fair last season.

The house has recently been opened to visitors again after being completely remodeled and refurnished. A different colored porcelain enamel exterior has also been put on. This was easily accomplished because the flat panels of porcelain enamel are securely held in place with a grooved clip-strip of stainless steel. Changing the exterior merely



involved slipping the old porcelain enameled metal out of the clips and inserting the new.

This steel house was built for The American Rolling Mill Company of Middletown, Ohio, and the Ferro Enamel Corporation of Cleveland, Ohio by the Insulated Steel Construction Company of Middletown, Ohio, using its frameless steel method of construction. By this method specially-formed sheets of steel are factory fabricated into large house-high wall sections and wide floor sections. On the site these sections are quickly assembled. The different pieces are welded together in the factory. In the field the large sections are joined with sheet metal screws.

J. J. Dale to Allsteel

James J. Dale has been elected vice president in charge of sales of The Allsteel Press Company, Chicago, having assumed his new duties July 1st. He was formerly vice president in charge of sales in the Chicago and Detroit territories for the Henry & Wright Mfg. Co., of Hartford, Conn.

Dail Steel Products Appointment

Malvin and May, Incorporated, 332 South Michigan Avenue, Chicago, Illinois, have been appointed sales engineers and representatives of the Dailaire systems of heating and air conditioning and cooling for the territory of northern Illinois, part of Iowa, Indiana and Wisconsin, by Dail Steel Products Company, Lansing, Michigan.

Ingle Fabricates Specialties

(Continued from page 12)

the joint. We have found that if possible on a long flat weld if a small edge is turned out on both pieces and these edges then welded together that the warpage will be eliminated. We have also found that using the same material for the welding rod insures a perfect joint will be made.

Jigs and Dies

By using jigs of different shapes and clamps for welding, a great deal of time is saved in our shop in working all types of material. In turning down inside edges on light gauges of small diameters up to six inches, we use a double sleeve made of 10-gauge weld and finished off with the top diameter of the outer sleeve the finished size. Then by cutting the hole in the material and allowing for the turn down we start the small taper through the hole and press it down into the larger sleeve

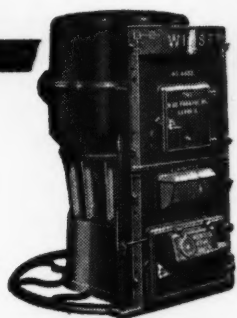
until it strikes a shoulder set on the small sleeve at the proper depth to allow for thickness of the material. The shoulder also flattens out the top edge. This arrangement can also be used when hammering the smaller sleeve into place. All patterns in our shop are numbered and a shop record is kept as well as a duplicate copy filed in the office. Those that are used regularly and have rivet holes to punch are provided with small horseshoe stops which fit against a collar on the guide above the punch.

Visitors to our plant are often surprised at the care taken in finishing our cabinet work—for example the frames and tops of our food service items. This attention to detail is not just accidental; we have found that tops first, then exteriors and third frames come in for close scrutiny by the eating public and by the eating establishment owners.

We exercise care as follows. Tops of metal tables are always made of number 16 gauge or heavier, depending on the width and length, as a rule number 15 if it is to be of stainless steel or monel metal, with polished surface. We use care to select a sheet that is level because any irregularity shows up glaringly in the finished top. Galvanized or black iron tops do not make much difference. We lay out the size wanted and form into the proper shape. We almost always use rounded corners with a radius of from $\frac{1}{2}$ to $1\frac{1}{2}$ inches which is allowed for in cutting. We then weld around the corner first, then make the butt seam, after which the top is given to the grinder who finishes it. Now the top is ready for mounting either on pipe legs or angle iron frame. The "hold down" bolts are not drilled through, but are spot welded to the under side using a template to locate them.

Bodies consist of various designs, such as an under open frame work with or without lower shelf. If

A "WISE" Policy on furnace sales



Self-cleaning radiator.
Air Blast Fire Pot.

Dealers and contractors who recognize advantages in such a policy will do well to ask for detailed information.

No obligation—
write today.



As every furnace man knows, a good furnace should have expert installation. Smart customers are catching on, too, and finding it pays in satisfaction.

A standard item in our sales policy is to sell Wise Furnaces *only through the established trade.*

By protecting the Wise dealer, we protect Wise customers—a bit of wisdom that makes everyone happier.

This policy applies to Fairweather Air Conditioning Units, as well.

The WISE FURNACE CO., AKRON OHIO

pipe legs are used they are screwed into a flange bolted to under side of table with ball feet at floor and an adjustable bracket to support shelf. Our angle iron under frames are always welded to insure a smooth, finished job. On steam tables the lower part of the table is usually inclosed to form a dish warming compartment and storage space, with sliding doors mounted on ball bearing rollers. Often on cook's tables metal bins are included in the construction and are so constructed that they can be removed for cleaning or washing. The bins are mounted on a round track pivot and must be perfectly balanced so as to remain open or closed when full as well as partly full.

Finishes

We use practically every known type of finish, including all kinds of paint, lacquer, and enamel, both brushed and sprayed, depending on the equipment. For all under work we first clean the metal thoroughly,

then apply red lead, then finish with two coats of aluminum varnish which we find is the most durable. Very often the red lead is eliminated and only the aluminum is used. For finishing heavy duty ranges we use a very high heat resistant black enameled which will also withstand the grease and the cleaning solution to which equipment of this type is subjected. For jobs which are exposed to the weather and a high grade finish is required, we find that nothing quite equals lacquer properly applied.

Perhaps a word or two on our sales and customer contact work will be of interest. Because we make and sell such a variety of items our contact with buyers is always interesting to us because we can profit only by selling the products our shop has been painstakingly taught to produce.

In the local market we sell direct to hotels, restaurants, public and private institutions. Oil burning heating systems we sell mainly through architects billing either to

the contractor or the owner. Outside of the local market we sell through distributors, both domestic and foreign.

In selling to the consumer, either direct or indirect, we have engineers for heating and ventilating systems and equipment and also engineers for kitchen equipment and general metal work. These men are also experienced salesmen. We have five of these men. We have an average force of 22 mechanics and helpers in the shop and nearly all of these men have responded to our urging that they be continually on the lookout for prospects for heating, kitchen equipment and general sheet metal work. We have taught them to realize that it is as much to their benefit as it is to ours to obtain new work and keep the entire force at work. Our advertising has been just about the same for the last five or six years; monthly circularizing of the architects, contractors, building and loan associations and investment companies.

A FURNACE MUST LOOK RIGHT *Outside* AS WELL AS INSIDE



No matter how good a furnace is people won't buy it unless it *looks good*. Built for perfect performance and lifelong service the U. S. STEEL FURNACE is also an object of beauty. The smooth proportions and green and silver colors of this super-heater dress up the most dingy cellar. And since no soot ever escapes it is like a piece of furniture—with choice of round or square casing.

When you show your customer how this attractive-looking furnace will give him 50% more heat with 25% less fuel than any other furnace, and will last as long as his house, you have made the sale.

You can be proud to handle the U. S. STEEL FURNACE. It will take you away from cheap competition and give you a boost in your community that nothing else can. There is no other furnace like it and there never can be. IT IS FULLY PATENTED.

Write now for further information.

U. S. PRESSED STEEL PRODUCTS CO.
KALAMAZOO, MICHIGAN

News Items

Inland Steel Appointments

Inland Steel Company, Chicago, Illinois, announces that Malcolm E. Gregg, since 1928 assistant district sales manager of the company's Milwaukee, Wisconsin office, has been appointed district sales manager at Milwaukee to succeed Harry L. McCauley, who died recently. Mr. Gregg has been in the steel or allied industries since 1904.

The company also announces that Maurice E. O'Brien has been employed as a salesman in the Chicago office. Mr. O'Brien has been affiliated with the Illinois Steel Company since 1920.

Moxie S. George has been employed as a salesman for the company's Milwaukee office. Mr. George started in the steel business with American Rolling Mill Company and was later with Moise Steel Company of Milwaukee.

Hardware Code Approved

Announcement is made by the National Wholesale Hardware Association, Philadelphia, that the Supplemental Code for the Wholesale Hardware Trade was approved July 30 and became effective August 9.

The association announces that ballots for the nomination of candidates and alternates on the Divisional Code Authority will be mailed to all members of the trade the first week in August. Copies of the Supplemental Code are in the hands of Secretary George A. Fernley, Secretary, 505 Arch Street, Philadelphia, and interested individuals may obtain a copy by addressing him.

Proof of Sheet Iron Durability

Inspection of the sheet iron roofs of 250 passenger cars of the elevated lines of the Chicago Rapid Transit Co., Chicago, Ill., recently revealed that the roofs, installed in 1913, are still in excellent condition—after 21 years of service. According to Mr. H. A. Otis, Engineer of Car Equipment for the Rapid Transit lines, none of the Toncan Iron sheets used for the 250 roofs has been replaced because of rust or general corrosion.

In view of the severe service conditions under which elevated cars operate in a city like Chicago, exposed as they are to all kinds of weather, smoke, soot and fumes from industrial plants, this 21-year record of trouble-free service is a tribute to the lasting qualities of modern sheet iron.

S. A. Knisely Made Republic Official

Stanley A. Knisely, of Cleveland, has been appointed advertising and sales promotion manager of Republic Steel Corporation, with headquarters at Youngstown, Ohio. He succeeds L. S. Hamaker who was recently made vice president and general manager of the Berger Mfg. Co., Republic subsidiary, of Canton, Ohio.

Knisely entered newspaper work in his home city of Canton, Ohio, and later held the positions of city editor and telegraph editor of the Cleveland Plain Dealer. He left the newspaper field to become advertising and sales manager of the National Paving Brick Association, with headquarters in Cleveland. After six and a half years in this position he became director of advertising research for the National Association of Flat Rolled Steel Manufacturers and served seven years in this capacity.

R. E. Barrett Elected Ohio Director

R. E. Barrett of the Barrett Sheet Metal Company, Dayton, Ohio, has been elected a member of the Board of Directors of the Ohio Sheet Metal Contractors Association. R. E. Barrett and his father have been in the warm air heating and sheet metal business in Dayton, Ohio, for more than 30 years and have been active in local and state association and business activities for many years.



You don't dare ignore these three Racketeers!

Wear, weather and corrosion take a terrific toll from buildings everywhere. None can completely escape this loss. But you can minimize the ravages of these three destructive forces by using GOHI, pure iron-copper alloy, the one sheet metal you can safely trust under all conditions.

GOHI is pure iron with just the right amount of copper added to give it unusual quality, durability and workability. It is the longest-lasting, low-cost ferrous metal.

Homogeneous, soft, ductile, GOHI is easy to shape, cut, stamp, bend, seam, draw, form and weld. The preferred sheet metal for those who build to last; who take pride in quality and workmanship; who insist upon using the best.



GOHI pure iron—copper alloy, is available in all sizes and gauges. Produced exclusively by the Newport Rolling Mill Company, Newport, Kentucky

GOHI

Pronounced
"GO-HIGH"

SHEET METAL



If you want to work with a manufacturer who keeps faith with legitimate dealers, whose 44 years' experience is a guarantee of a well engineered line, whose spirit of progress points to constant improvement and an advanced product, whose moral and financial responsibility is unquestioned, *then* investigate the Niagara Warm Air Furnace. You may install it alone or as the basis of the Niagara Coal-Fired Air Conditioning Units which are proving eminently satisfactory wherever they have been sold.

If it's gas, you can cash in on those inquiries with the Niagara Gas-Fired Air Conditioning Units. Two exclusive Niagara features—the central heating section and the deep, diagonal corrugations in the radiator sides—are enough in themselves to call for the most serious investigation.

IMPORTANT. To help make your repair business more profitable, we regularly ship all original repair parts for Niagara Warm Air Furnaces within 24 hours after receipt of order.

THE FOREST CITY FOUNDRIES COMPANY
2504 West 27th Street Cleveland, Ohio

NIAGARA
WARM AIR FURNACES

New Literature

Sunbeam Air Conditioning Manual

Fox Furnace Company, Elyria, Ohio, announces a new engineering manual for Sunbeam air conditioning systems. The aim of the manual, according to the company, is to give contractors a concise yet complete analysis of the design and installation of air conditioning systems.

The booklet is made up to carry through from start to finish a typical engineering design problem. In proper sequence, the manual covers estimating heating requirements, duct losses, chart for converting c. f. m. to square inches of individual pipe systems, trunk line design factors, resistance, return air systems, etc.

By following the manual and using the sample data sheets a contractor can design an air conditioning system for Sunbeam equipment. Each particular problem has an analysis and the correct answer. In most cases a typical example is figured out.

This manual is based on a design not exceeding 550 f. p. m. velocity in mains.

Contractors doing forced air work may secure a copy of the manual for their library by writing the Fox Company.

Liberty Foundry Catalog and Price Sheet

The Liberty Foundry Company, St. Louis, Missouri, have made available for contractors an attractive folder containing their new Mellow and Front Rank leaflet showing the cast and steel furnaces, air conditioning unit, blowers, filters, humidifiers, controls and special duct work for air conditioning installations.

The leaflet gives capacities, sizes and illustrations of all apparatus used with tables of dimensions. The company has also prepared a dealers' net price list for cast and steel furnaces and a supplementary price sheet to cover Mellow and Front Rank air conditioning systems. Dealers interested in this material may secure copies by writing the Liberty Company.

Faultless Heater Leaflet

The Faultless Heater Corporation, 1220 Main Avenue, Cleveland, Ohio, successors to Graff Furnace Company, announce a new leaflet supplementing the May 21 price list and showing a new size added to the company's Faultless-Comfort series of furnaces.

The company states that this new size furnace makes the line of cast iron furnaces for small home installations unusually complete. The leaflet describes the features of the new furnace and tabulations of all casting dimensions and prices are included.

Contractors may secure copies by addressing the company.

Steel Ceiling Leaflet

A leaflet showing the range in patterns and sizes of steel ceilings, borders, cornices and moldings, may be obtained by writing the Broadway Steel Ceiling Company, 658 Broadway Street, Lowell, Mass.

In addition to information on the company's line of products, additional information on safety and heat resisting factors of steel ceilings is contained in this piece of literature.

Welding Leaflet

The Lincoln Electric Company, Cleveland, Ohio, manufacturers of welding apparatus announce welder specification bulletin No. 30 covering general specifications for A. C. type motor driven welders. The leaflet charts parts of the apparatus such as generator, motor, control and general construction.

Full information on the characteristics of the units are also shown. Copies may be obtained from the company.

Code Organization

(Continued from page 16)

J. Edward Linck, 2591 North Marshall Street, Philadelphia (representing large sheet metal shops).

Charles Salinger, 1110 Ridge Avenue, Philadelphia (representing large combination, sheet metal and roofing shops).

Hugh F. Munro, 2406 North Mascher Street, Philadelphia (representing medium and small jobbing shops).

F. Marshall Johnson, 626 Cherry Street, Philadelphia (representing large jobbing shops).

Irwin Prickett, Land Title Building, Philadelphia (representing built-up roofing, waterproofing).

J. M. D. Churchill, 1823 Market Street, Philadelphia (representing warm air heating and air conditioning).

Seattle, Wash.

(Code area—City of Seattle)

Carl Honore.

Mark Favro.

William Carsten.

Guy E. Peterman.

Marcus E. Getchell.

Isaac McVey (Treasurer).

Robert W. Larsen (Executive Sec.)

Cleveland, Ohio

(Code area—Cuyahoga County)

Wm. E. Feiten, Wm. E. Feiten Co., 2252 East 93rd St. (representing sheet metal and coppersmithing).

H. E. Cook, Standard Roofing Co.,

1547 E. 43rd St. (representing composition roofing and insulation).

D. A. Mannen, Mannen & Roth Co., 9108 Woodland Ave. (representing ventilating, air conditioning and blow pipe work).

Chas. Haettich, Ohio Roofing Co., 14731 Lorain Ave. (representing re-roofing, re-sizing and asphalt shingles).

C. McRae, Service Sheet Metal Works, West 92nd and Lorain Ave. (representing warm air furnace work).

A. L. Sacheroff, The Weatherite Co., 1266 West Sixth St. (representing caulking, metallic waterproofing, plaster bond and cold coating).

M. J. Cutter, Cutter Sheet Metal Mfg. Co., 4408 St. Clair Ave. (representing restaurant equipment).

Walter H. Weenink, John Weenink & Sons Co., 4077 East 82nd St. (representing slate, tile and asphalt shingles).

H. E. Pearse, The Warren Roofing Co., 451 The Arcade (representing asphalt, mastic and tar concrete floors).

Dayton, Ohio

(Code area—Dayton Trade Area)

Chairman—Harry Kenney, The Kenney Sheet Metal & Roofing Co.

Secretary—Lee G. Himes, The Wehner Roofing & Tinning Co.

John T. Barrett, Barrett Sheet Metal Co.

Walter Wuichet, The Chas. Wuichet Co.

Artie A. Smith, Artie A. Smith Co.

P. E. Sullivan, P. E. Sullivan Sheet Metal Co.

Harry Michael, Arro-Lock Universal Roofing Co.

Albert Hoersting, The Gem City Furnace Co.

Leo B. Budde, Budde Sheet Metal Works.

Ambrose Doran, The Dayton Felt Roofing Co.

Otto Young, Young Sheet Metal Co.

Milwaukee, Wis.

(Code area—Milwaukee County)

C. Holmes, Milwaukee, Wis., (representing roofers).

I. Langer, Milwaukee, Wis., (representing roofers).

Herbert Kroeger, Milwaukee, Wis., (representing roofers).

J. G. Bauer, Milwaukee, Wis., (representing sheet metal industry).

E. S. Stroebel, Milwaukee, Wis., (representing sheet metal industry).

H. H. Peters, Milwaukee, Wis., (representing sheet metal industry).

Fulton-Montgomery Counties, N. Y.

(Code area—Fulton-Montgomery Counties, N. Y.)

Harry Taube, South Perry Street, Johnstown, N. Y. (chairman).

Fred Chatterton, 84 Third street, Gloversville, N. Y. (secretary-treasurer).

H. S. Lanphere, North Main Street, Gloversville, N. Y.

A. C. Frydenborg, Wall Street, Amsterdam, N. Y.

Duane Evans, Florida Avenue, Amsterdam, N. Y.

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ORNAMENTAL GRILLES

In Bronze	Aluminum
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Many beautiful designs to select from in the Moderne and other original styles as well as all standard patterns. H. & K. Perforated Metal Grilles are suitable for the finest modern buildings and are unexcelled for beauty, workmanship and finish.


Perforated Metal For Every Use

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PERFORATING CO.

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FOR ALL KNOWN USES



In Industry and Construction

Use sheets of recognized reputation and value. For roofing, siding, gutters, spouting, air conditioning systems, and general sheet metal work — Keystone Copper Steel gives maximum rust resistance.

Insist upon **AMERICAN** Black Sheets, Keystone Rust Resisting Copper Steel Sheets, Apollo Best Bloom Galvanized Sheets, Galvanized Sheets, Heavy-Coated Galvanized Sheets, Formed Roofing and Siding Products, Tin Plates, Terne Plates, Black Plate, Etc.

Write us relative to your sheet steel requirements. This Company also manufactures U S S STAINLESS and Heat Resisting Steel Sheets and Light Plates for all purposes.

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Vice Chairman—Chas. Joyce, Joyce & Kramer, 110 Hamilton St., Albany.

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Geo. A. Weingartner, 335 Fifth Ave., Troy.

For City of Rensselaer

G. S. Russell, care W. W. Gray, 121 Broadway, Rensselaer.

For City of Cohoes

S. J. MacFarland, 216 Remsen St., Cohoes.

For City of Albany

V. F. Conner, 67 Northern Blvd., Albany.

P. S. Varden, Varden Bros., 175 Watervliet Ave., Albany.

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(Code area—Clark County)

E. G. Keller.

O. B. Deaton.

Chas. F. Hauck.

F. O. Jones.

C. H. Lawrence.

Indianapolis, Ind.

(Code area—Boone, Hendricks, Johnson, Hancock, Hamilton, Morgan, Marion, Shelby counties).

District Chairman—Elmer R. Mul-

lin, owner; 5517 Bonne Ave., Indianapolis (representing sheet metal, warm air and roofing).

County Chairman, Boone County—Ralph Ten Eyck, owner; 532 Indianapolis Ave., Lebanon (representing sheet metal and roofing).

Hendricks County—W. E. Wachtell, owner; Danville (representing sheet metal, warm air heating and roofing).

Johnson County—O. S. Wagner, proprietor; Wagner Mfg. Co., Franklin (representing sheet metal and warm air heating).

Hancock County—P. M. Ogg, proprietor; Standard Heating & Plbg. Co., Greenfield (representing sheet metal and warm air heating).

Hamilton County—Fred Michaels, proprietor; Noblesville (representing sheet metal and roofing).

Morgan County—W. R. Davis, proprietor; Martinsville (representing sheet metal, warm air heating and roofing).

Marion County—E. L. Carr, president; Mid-West Heating & Service Co., 2921 East 10th St., Indianapolis (representing sheet metal and warm air heating).

Shelby County—L. Howard, proprietor; Shelbyville (representing sheet metal, warm air heating and roofing).

Chicago

(Code area—Cook County)

Paul M. Barth, O. M. Barth & Sons, 547 W. 69th St., Chicago (representing furnace, air conditioning, cooling contractors).

John Weiner, Columbia Sheet Metal Works, 2646 Lincoln Ave., Chicago (representing metal windows, doors, cornices, skylights and general sheet metal work).

J. H. Klunder, Dependon Roofing Co., 3525 N. Cicero Ave., Chicago (representing roofing, re-siding, water-proofing, damp-proofing, insulation contractors).

P. R. West, Western Ventilating & Engineering Co., 24 S. Clinton St., Chicago (representing ventilating and air conditioning contractors).

W. J. Perkinson, Perkinson-Brown Co., 412 N. Lincoln St., Chicago (representing slate, tile, asbestos shingle roofing).

Western South Carolina

(Code area—Anderson, Cherokee, Greenville, Greenwood, Laurens, Newberry, Oconee, Pickens, Spartanburg, Union counties)

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T. M. Divver, Anderson (Vice-chairman).

R. O. Pickens, Jr., Spartanburg (Sec.-Treas.).

County Chairmen:

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J. C. Ware, Cherokee.

I. G. Smith, Greenville.

C. E. Bourne, Jr., Greenwood.

F. S. Boyd, Laurens.

A. F. Bush, Newberry.

J. King Dillard, Oconee.

F. E. Pickens, Pickens.

A. W. Walker, Spartanburg.

J. E. Hughes, Union.

REPAIRS

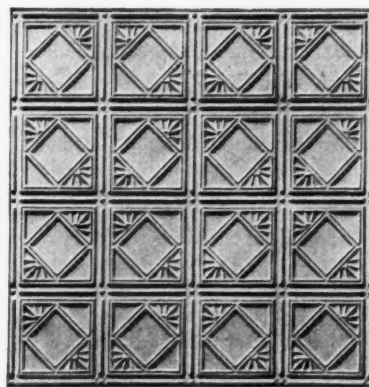
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BOILER****FIRE POTS
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STEEL CEILINGS



Smart sheet metal contractors are going after steel ceiling business—and finding that Canton's designs, quality and co-operation are producing it.

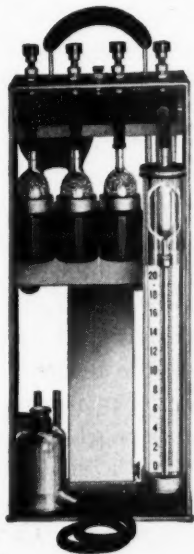
Steel ceilings have the talking points of cleanliness, safety, economy and attractiveness—and stores, halls, schools, taverns, churches and homes are all excellent prospects.

Now is the time to work up steel ceiling business. Money is available for "renovizing." The season is right.

*Find out all about the Canton
line and Canton Sales helps.***CANTON STEEL CEILING CO.**
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Warehouse Service: 497 West Street, New York, N. Y.

Meeting new demands for ACCURACY and speed



The Ellison Portable Flue Gas Analyzer was designed to meet special needs in checking the efficiency of an oilburner's operation with greater accuracy and speed.

The use of hard rubber for both the header and solution containers eliminates corrosions. Stop cocks and grease are eliminated by a needle valve on the burette. Curled hard rubber in the solution chambers allows greater absorption without discoloration. A large white celluloid scale gives high visibility. A chromium case carries flue gas thermometers and a draft gage.

This new and better analyzer will cut installation and servicing costs. Write today for prices.

Ellison Draft Gage Company
214 Kinzie Street Chicago

There's Real MONEY for You on these Roofs

Paint the sheet metal roofs in your territory with Thompson's "370 SPECIAL RED" — it will do a job which will be completely satisfactory to your customers and which will put real money into your pockets.

Thompson's "370 SPECIAL RED" is a heavy bodied Red Oxide Paint especially designed for Tanners and Roofers and offers positive protection to all metal surfaces, especially those exposed to the elements.

Pure Red Lead, Spanish Sesquioxide of Iron and highest grade

Raw and Boiled Linseed Oil combine to make "370 SPECIAL RED" a paint which has extraordinary powers in resisting rust and corrosion.

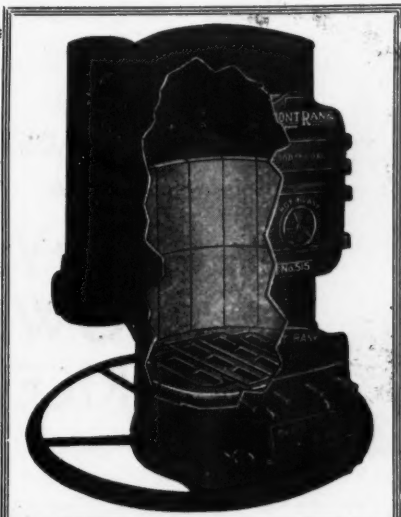
"370 SPECIAL RED" is not just another paint, but a paint which gives you something to talk about to your customer—a fact which will go a long way toward getting the business for you.

Other Thompson Products are Alumbrite, the new Aluminum Paint for Wood and Steel and Lin-O-Jap, the Perfect Reducing Oil for All Paint.

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P. O. BOX 557, N. S. PITTSBURGH, PA.

"370 SPECIAL RED"
positive protection for Sheet Metal Roofs

Pick the WINNERS!



FRONT RANK
TRADE NAME REGISTERED

The FRONT RANK is unique in that it burns any kind of fuel equally efficiently and economically. No matter what fuel is used, all of it is burned and all the heat utilized. A wide range of sizes is available.

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To meet present day buying demands, the warm air heating dealer is learning that his *big* opportunity lies in handling a complete line of furnaces . . . a line which comprises a cast iron or steel furnace which will satisfy every taste and every pocket-book. The Liberty Line meets these specifications . . . and *more*. In the design and construction of every unit in the Liberty Line extreme care has been exercised to insure efficient operation, economical fuel consumption and *long* life. You will find that MELLOW and FRONT RANK will win enthusiastic customers for you . . . and that there's a gratifying margin of profit in every installation. Pick the winners! Pick the Liberty Line!

Write for complete details . . . today.



M E L L O W
WARM AIR FURNACE

All castings in the MELLOW Furnace are from special analysis iron; the danger of cracking and burnouts is eliminated and a long life of service is assured. Truly a cast iron furnace of merit.

LIBERTY FOUNDRY COMPANY, ST. LOUIS, MO.

Ohio Convention

(Continued from page 19)

but the contractor who places such a roof must have in his possession written contract copies which specifically show he has not guaranteed for more than two years.

The inspirational talk of the business sessions was delivered by Charles E. Watkins of Muncie, Indiana, on the subject "Fitting Modern Business to New Conditions." Among the many interesting points raised by the speaker were—business in years gone by was concerned primarily with one problem, such as the production of raw material, the manufacture of a product, etc., whereas today large business is concerned with all problems from the growing of the raw material to the collecting of the final sales installment. Mr. Watkins declared that large business today has lost the personal touch and that our industry is in an admirable position to instill the kind of loyalty which the old time manufacturer enjoyed.

One of the most interesting discussions of the convention was made by W. J. Hennessey of Williamson Heater Company, Cincinnati, on the subject of air conditioning. Mr. Hennessey declared that intelligent engineering can be made one of the principal adjuncts of the selling campaign, that good looking plans impress the home owner with the thought the contractor has given to the particular problem and further serve the purpose of setting up a mark at which competition must shoot.

Many questions were asked from the floor and in answering the speaker gave a number of interesting facts, as his personal opinion. One such was that he believes the easiest way to balance a forced air system is to hang thermometers in the center of every room at the breathing level and to balance the rooms to the pre-selected temperature letting the c.f.m. go where it will. Slightly over-sized blowers were recommended to take care of any unexpected friction or the ad-

dition of different types of filtering or washing devices or the addition of one or more runs. "Do not place the blower directly under a cold air register," was one of the interesting recommendations made.

In the speaker's opinion we have only begun to touch on the general problem of controls and an intimate study of each individual system before a control is installed was recommended. The tendency toward more thermostats, more elaborate control systems, different types of registers and locations in order to give adequate distribution was cited as developments of the future.

The three most popular members and the three members who have done most to advance the cause of association work in Ohio during the last year—A. E. Bogen, 1st; Carl M. Gundlach, 2nd, and James J. Dalzell, 3rd—according to the vote of the convention, were presented with a lamp as first honor and cocktail shakers, as second and third honors by Chase Brass and Copper Company.

WHITNEY		LEVER PUNCHES
No. 4B PUNCH  Length—8½ inches. Capacity ¼-inch hole through 16 gauge. Deep Throat—2 inches. Weight—3 pounds. Punches and Dies—¾" to 1½" by 64ths.	No. 91 PUNCH  Capacity — ¼-inch hole through ¼-inch, 1-inch hole through ¾-inch and 2-inch hole through ¾-inch iron. Depth throat 5-inches. Weight — 82 lbs.	No. 1 PUNCH  Length — 34 inches. Capacity — ¾-inch hole through ¼-inch iron. Punches and dies in sizes from ¼ to 1½ by 64ths.
No. 6 PUNCH  Length — 26½ inches. Capacity — ¼-inch hole through ¾-inch iron; especially adapted for button punching or templet work. Punches and dies ¾" to 1½" by 32nds.	W.A. WHITNEY MFG. CO. We have tools for every purpose needed by Sheet Metal Contractors. Ask your Jobber	No. 2 PUNCH  Length — 23 inches. Capacity — ¾-inch hole through ¼-inch iron. Punches and dies in sizes ¾-inch to 1½-inch by 64ths.
		CHANNEL IRON PUNCH  Companion to No. 2 Punch. Every part of the two Punches interchangeable, including punches and dies. Capacity — ¼-inch hole through ¼-inch iron.


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 636 RACE ST. ROCKFORD, ILL.

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A QUALITY
 WELDED
 STEEL
 FURNACE
 AT A
**VERY
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DEALERS: Write for Full Information and Prices.

You Will Be Agreeably Surprised at Value and Selling Help Offered. The Hess Line Is Complete, Including Air Conditioners and Accessories. Ask for Our New Dealer Portfolio.

Hess Warming & Ventilating Co.
 1211 So. Western Ave. Chicago, Ill.

New Literature . . .

Temperature Control Booklet

An unusual and instructive booklet covering the subject of temperature control has been prepared by the Penn Electric Switch Co., Des Moines, Iowa. The booklet, which is in loose-leaf form, contains an article describing the Penn Company's new system of control. Operating charts containing the results obtained with the system are used profusely throughout the discussion and graphic photographs showing temperature differential within rooms and the meaning of temperature differential are also given.

Full discussion of the new Penn Temtrol system and how it operates is also included. The booklet contains full information on all of the various types of control apparatus manufactured by the company.

Contractors may obtain copy of this informative booklet by addressing the company.

Mercoid Control Leaflet

A new leaflet, "A balanced set of automatic controls," has been prepared by the Mercoid Corporation, 4201 Belmont Avenue, Chicago, Illinois. The leaflet illustrates and covers the company's "Sensatherm" thermostat, the various types of combination fan limit and safety controls and the individual fan or limit switch. Brief explanation is included of the company's various types of apparatus.

Contractors may secure copies by addressing the Mercoid Corporation.

Peerless Foundry Literature

Peerless Foundry Co., 1853 Ludlow Avenue, Indianapolis, Indiana, has revised and brought out literature covering the company's line of heating and air conditioning apparatus.

One leaflet deals with the Peerless cast iron furnace showing by means of an illustration and blocked arrows the features of construction with specifications and dimensions. A similar leaflet covers the company's steel furnace.

Two large folders, new in the company's line of literature, cover the coal burning steel and the special cast furnace; large sized illustrations point out the features of importance and complete information on the construction, capacities and dimensions for both types of furnaces are given.

The last piece of literature covers the company's air conditioning unit. This leaflet describes the blowers, filters used and the construction of the air conditioning cabinet. The leaflet is suitable for distribution to prospective buyers.

Copies of all this literature may be obtained from the company.

Wise Furnace Leaflet

The Wise Furnace Company, Akron, Ohio, have prepared a leaflet, "A better, cleaner and easier way," designed for distribution to home owners and explaining by illustration and text the improvements which have been made in present day warm air heating. The leaflet is designed particularly for the gas heating prospect.

The text covers such advantages of gas heating as convenience, cleanliness, comfort and cost. Typical quotations from satisfied home owners with photographs of the exteriors are included. The last part of the leaflet shows cut-away and closed views of the company's line of gas furnaces.

Copies may be obtained from the company.

Compensated Control

Barber-Colman Company, Rockford, Illinois, will mail to contractors a leaflet covering the company's new compensated control system for residential heating.

This system may be used for boiler or furnace installations and consists primarily of a standard draft and check motor with room thermostat and an auxiliary control placed in a warm air run and so set that a predetermined temperature is always maintained throughout the pipe system. The principle is that this auxiliary control anticipates room cooling and starts heat into the room before the room thermostat reaches the setting where the damper is opened.

Faultless Heater Corporation

CLEVELAND, OHIO

Continues the manufacture of the former
Graff Furnace Company's

FAMOUS

FAULTLESS FURNACES

and

FURNACE REPAIR PARTS

(from the original patterns)

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**FAULTLESS
FAULTLESS-COMFORT
LACKAWANNA
RIVAL**

**COMFORT
CAPITAL
PHILADELPHIA
and other Graff Furnaces**

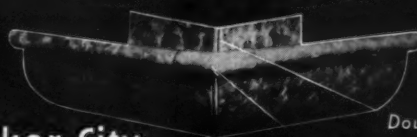
Among the Supply Houses carrying a stock of these Repair Parts made from our original patterns are the following:

NEW YORK CITY, N. Y.
Faultless Range & Mfg. Co.
WASHINGTON, D. C.
Fries, Beall & Sharp Co.
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ALLENTOWN, PA.
Pennsylvania Supply & Mfg. Co.
SCRANTON, PA.
Samuel Weinberg & Sons, Inc.
WEST PITTSBURGH, PA.
Thos. R. Davis Co.
MILWAUKEE, WIS.
The Speich Company
BUFFALO, N. Y.
O. G. & D. H. Donaldson Co.

CHICAGO, ILL.
Associated Heater Parts Co.
YOUNGSTOWN, OHIO
Banner Repair Parts Co.
ROCHESTER, N. Y.
Henry Siebert Sons, Inc.
PITTSBURGH, PA.
The Graff Company
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Shambien Furnace Parts Co.
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These Supply Houses can give you prompt service.

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Reinforced Corner

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Order from your jobber.

Mitres, conductor pipe, hangers, eaves trough,
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FURNACE REPAIR PARTS

Made by National are made to fit the job. Parts made to fit only new furnaces will not do as well. "Nothing is obsolete with National."

Send for price list A22 and save.

NATIONAL FOUNDRY AND FURNACE CO.
DAYTON, OHIO

Chromium Plated Metal on Ford Building

(Continued from page 22)



Each of the ornamental columns consists of a core of plymetal sheathed in very thin chromium plated copper. See story for details.

light and relatively thin, measuring only eighteen thousandths of an inch. This use of thin sheet is the result of Albert Kahn's ingenuity in converting soft thin metal into sections and panels that are as hard as steel and as light as wood. This was accomplished at the plant of the Haselike Manufacturing Company at Grand Rapids, Michigan, where each sheet was cemented to plymetl, the edges turned over and fastened on the reverse side and then backed up with a light sheet of steel. By this device many thousands of square feet of metal were put in place with a minimum amount of

effort and expense. Incidentally, there are some 2600 individual panels in the Ford Building.

The illumination, which is remarkable, was made possible by reflectors made of chromium plated zinc, consisting of rolled zinc plated with chromium and later polished to a high lustre. Large sheets of this metal were converted by the Major Equipment Company of Chicago into what is known as continuous trough reflectors. Had it been necessary to plate these reflectors with chromium after they had been formed it would have taken several weeks in the average commercial

plating shop; the costs would have been doubled and considerable inconvenience would have upset the orderly progress of construction at a time when work had to be pushed both day and night.

These reflectors measure a few hundred feet more than 6000 feet and are found along the front wall of the balcony fascia and on the outside columns.

The manufacturers of this plated metal, the APOLLO Metal Works of La Salle, Illinois, have through experimentation, developed a process which is claimed to yield a sheet of copper faced with hard chromium that will survive severe usage on both interior and exterior work. The chromium is said to become a part of the base metal. Attacked by fruit and food acids or alcohol, no cleaning, other than washing with neutral soap and water, is ever necessary.

In the manufacture of this material, large sheets of copper, forty-two inches by one hundred and ten inches, are plated with chromium by a process which entails hours of slow, closely controlled operations, frequently fifteen in number. Each sheet, when it emerges from this process is covered with a heavy, dense plate which can be bent and formed into various commercial products. This bending and forming is said not to crack the chromium nor diminish its efficiency after the metal has been converted into its final shape and placed in service.

ALL REPAIR PARTS for **FURNACES
BOILERS
STOVES
RANGES**

**A.G. BRAUER
SUPPLY COMPANY**

316 NO. THIRD ST. + SAINT LOUIS
IN STOCK • READY FOR IMMEDIATE SHIPMENT

Install **ÆOLUS**
Improved
VENTILATORS

**FOR industrial buildings,
schools, homes, theaters, etc.**
Made in 14 different metals.
**Constant ventilation — no noise
— no upkeep.**

ÆOLUS DICKINSON
Industrial Division of Paul Dickinson,
Inc.
**3332-52 South Artesian Avenue
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Working to within 1/1,000 of an inch—
you usually associate that with watch mak-
ing. Yet we work that close in many oper-
ations in making Independent Fabrikated
Registers and Cold Air Faces.

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INDEPENDENT REGISTER AND MFG. CO.

Sell the
BRUNETT PATENTED HEAT UTILIZER
The latest improvement in fuel saving—

Will Increase Your

... SALES
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and Will Save Your Customers 25 to 50%
of Their Fuel Costs

WRITE TODAY FOR DETAILED INFORMATION

BROWN SHEET IRON & STEEL COMPANY

Pioneer Welders of the Northwest

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Air Conditioning

- What happens between two rooms, one having a six minute air change, and the adjoining room a twelve minute air change?
- Can you install a thermostat control system properly?

The answers to these and hundreds of other mechanical questions about air conditioning are appearing in the monthly *Air Conditioning Section of AMERICAN ARTISAN*.

If you do not now get the ARTISAN, send us \$2 and we will enter your subscription for a full year—12 consecutive issues. Your subscription will yield a rich harvest of money making ideas and solutions to many mechanical problems connected with warm air heating and sheet metal contracting.

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Count the
minutes saved—
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Don't take our word for it, however
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Satisfactory FURNACE INSTALLATION

The most satisfactory furnace installations result from the use of Walsh Asbestos Furnace Cement. No longer is it necessary to risk your reputation on furnace cements of questionable merit... just use Walsh on every installation and repair job.



•Walsh Asbestos Fur- 100, 250 and 500 lb.
nace Cement is fur- steel drums.
nished in 1, 2, 3, 5, 8 •We also make Furnace
and 10 lb. cans; 25, 50. Tile and Fire Brick.

WALSH REFRACATORIES CORP.
Producers of High Grade Refractories for 50 Years
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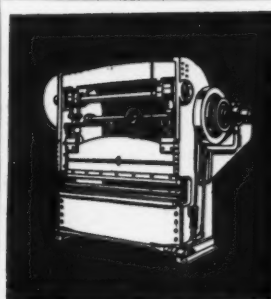
"Talk About Profitable Repair Orders and Cleaning Profits with the TORNADO Furnace and Boiler Cleaner



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865 Blackhawk Street, Chicago, Ill.

"My TORNADO Furnace & Boiler Cleaner has brought me more profitable repair and replacement business than I have had in years in addition to hundreds of dollars profit on the cleaning. In our 35 years in business it is the most profitable investment we have ever made." So says the General Repair and Equipment Co., Elizabeth, N. J.

Hundreds of other TORNADO users are also cashing in on the splendid profits to be made with the TORNADO. You too can earn real money with the TORNADO. Send in at once for complete details and also for the facts proving Breuer's TORNADO to be a superior cleaner with the most complete tools (chimney cleaner if desired)—No obligation—Write us TODAY for free trial offer.



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HAND BENDING BRAKE

Steel Brakes—Presses—Shears

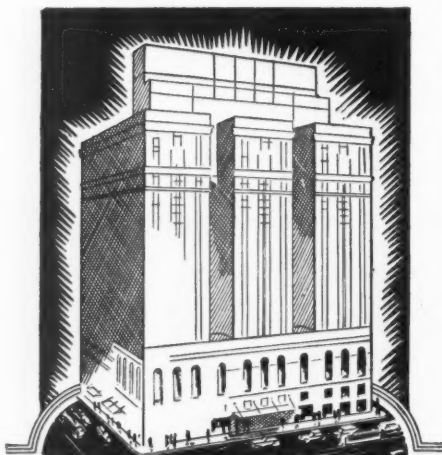
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RENDEZVOUS

of PITTSBURGH'S SMART SET



Two famous restaurants, a tap room, a cafeteria, a roof garden decorated by the late Joseph Urban, the Continental Bar, the Halter and Hurdle Room, and famous dance orchestras provide a

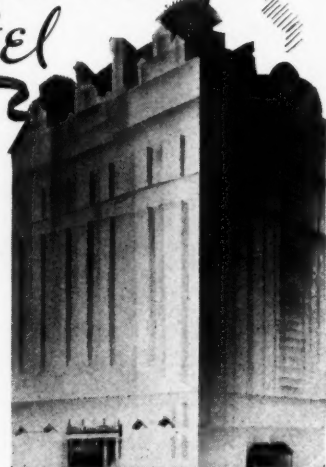
variety of opportunities for food, drink and entertainment at a wide range of prices. Rooms are cozy and elegantly furnished, rates reasonable. Centrally located, a few steps from anywhere.

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1600 ROOMS • 1600 BATHS

A Distinguished Hotel

YOUR HOME IN
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Here a gracious, unobtrusive hospitality in the best Philadelphia tradition... every thought for your comfort... rooms smartly modern in decoration and appointments, including Simmons Beds... the skill of Bellevue chefs... and a convenience of location that will make yours a well remembered visit.

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FROM \$2 A DAY

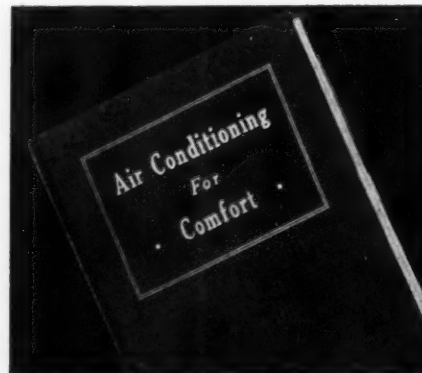
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Close to the North Gates of the Fair and every main attraction in Chicago. Rooms are large and pleasant with a beautiful view of Grant Park. Fine food too, at low cost.

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Hotel **AUDITORIUM**
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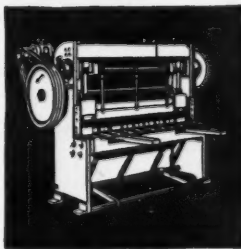
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